Intertech Technician Training Manual

Table of Contents

- Introduction to Intertech
- Installation
    - Dishes; 7-16
    - Mounting; 17-46
    - Receivers; 47-49
    - Connectivity; 80-104
    - SHS; 105-119
    - Trouble Shooting; 120-128
    - Customer Education; 129-30
    - DishNET; 131-168
    - Legacy; 169-171
- CSAT; 172-173
- Grounding; 174-182
- Connectors; 183-187
- Job Aids; 188-200
- Policies/Forms; 201-217

Introduction to Intertech

What is Intertech? Intertech is a RSP (Regional service provider) for Dish Network. Intertech covers parts of Western NY, Northwestern PA, Vermont, and Massachusetts.

This is an exciting, constantly changing industry. The business provides many opportunities for individuals who have a desire to grow and learn about electronics and the dynamic businesses of entertainment and information delivery.

You have an exciting role at Intertech. Customers have chosen to buy Dish products and services – and you are the one who arrives at the customer's home and brings them the products and services that they want to have in their home.

The customer will remember your conversation, your care of the customer's personal property, your knowledge of programming services, your appearance, your performance, and your ability to treat the customer's home "as if it were your own". As a Technician, you set the tone of the customer's future relationship with the company.

For these reasons, you will need both technical and social skills. A positive attitude and enthusiasm are the basic ingredients of successful customer service. They help to create the professional image your customer will appreciate and remember.

Dish procedures and standards are designed to provide an installation where the cabling, connectors and grounding should not need replacement for at least 10 to 15years. The information you will be provided in training reflects new standards that are designed for the current and future dish equipment.

The purpose of standards is to establish consistent practices and procedures. With uniformity, you will deliver safe, efficient, and quality services. These standards will help you work in a manner that satisfies customers.

As an RSP we are expected to install new customers and maintain all current customers to include upgrades to existing systems and service or maintaining existing systems. We also provide Internet service via DishNET.

Intertech is also an authorized retailer to sell and service Dish.

Team Leader Phone numbers

Gino Sposito
On call Monday
716-583-4768

Hugo Tavarez
On call Tuesday
716-574-1613

Austin Gartley
On call Wednesday
716-923-5568

Jason Knepshield
On Call Thursday
716-583-4750

Rick Delregno
On call Friday
716-583-2456

Dave Schroeder
On call Saturday
716-583-4727

Hugo or Austin
On call Sunday

Orbital Location by Dish Antenna

Choose the correct dish antenna based on orbital locations needed.

	DBS						FSS		
	61.5	**72.7**	**77**	**110**	**119**	**129**	**105**	**118.7**	**121**
DISH 500*				X	X				
DISH 1000				X	X	X			
DISH 500+				X	X			X	
DISH 1000+				X	X	X		X	
DISH 1000.2				X	X	X			
DISH 1000.4 (WA)				X	X	X			
DISH 1000.4 (EA)	X	X	X						
DISH 500AK (Alaska)					X	X			
DISH 500HW (Hawaii West)					X	X			
DISH 500 HE/PR (Hawaii East, Puerto Rico, U.S. Virgin Islands)				X	X				

*The DISH 500 is also used as a single orbital dish or wing dish and can be pointed to any one DBS satellite. See these options on page 2-2.

Tool List

Company Supplied Tools

VAN	
Cell Phone	
20'-24' Ladder	
32' ladder	
Shovel	
Post Hole Digger	
Fire Extinguisher	
First Aid Kit	
Traffic Triangle/ Road Flares	
1/2" Drill Bit Auger	
5/8" Drill Bit Auger	
3/4" Drill Bit Auger	
1/2" Masonry Bit	
5/8" Masonry Bit	
3/4" Masonry Bit	
3/8" Masonry Bit for lag shields	
3/8" Steel Drill Bit	
Phone	
Step Ladder - 1ft	

Technician's Personal Tools

Tool Belt/Pouch	
Wire Cutters	
Pliers (Needle nose or other)	
Flat Head Screw Driver	
Philips Head Screw Driver	
7/16 Opened End Wrench	
1/2 Opened End Wrench	
7/16 Socket and Ratchet	
Bubble Level(Magnetic)	
Wire Strippers/ Razor Blade	
Flashlight	
GPS	
Hammer	
Phone Crimpers(4 Pin)	
Cordless Hammer Drill	
1/2" Driver	
7/16" Driver	
3/8" Driver	
1/4" Driver	
Sight Finder(Suunto)	
Signal Meter(Super buddy)	
Connector Compression Tool	
Coax Wire Stripper	
Non Adjust Blade	
Philips/Flat Screw Lag Driver	
Line Toner	
Back-up Meter	
3/8" Opened End Wrench	
Hack Saw/ Pipe Cutter	
Outlet Tester	
Stud Finder	
Drywall Saw	
Tape Measure	
Glow Rods/Fish Tape	
Small Mirror	
5 Gallon Bucket	

*****Italicized items are available through Intertech*

ZIRCON
LeverLock 25
DEWALT

DISH Pro Plus 500 + LNBF

Features

••DPP 500+ LNBF is used with the original DISH 500+ antenna to receive 110°W, 118.7°W, and 119°W.

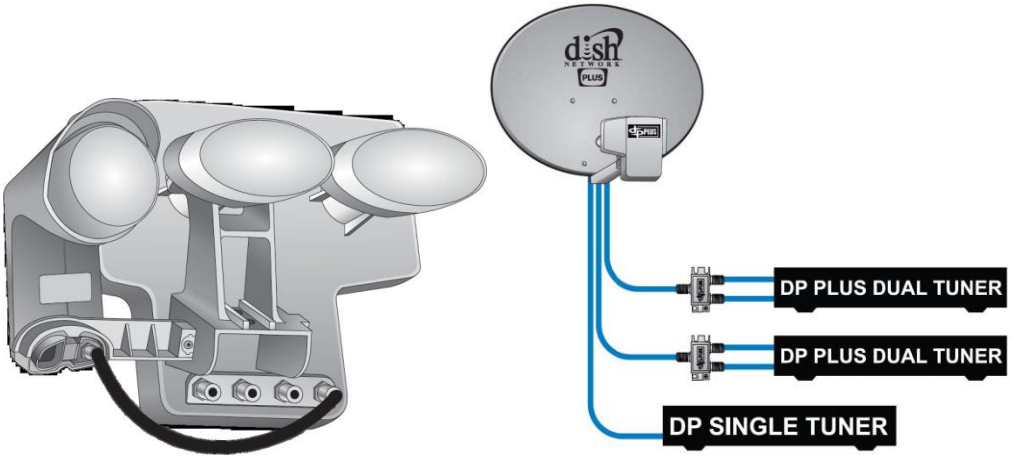
••Three receiver output ports support direct connection to either three single-tuner receivers or three DISH Pro Plus (dual-tuner) receivers (when used with a DPP Separator), or a combination of these receivers.

••Includes an LNB In port to connect a fourth orbital location.

••Default output ports of the DPP 500+ LNBF are 119°W on Port 1, 110°W on Port 2, and 118.7°W on Port 3.

••Upgrade the DPP 500+ LNBF to a DPP 1000+ LNBF assembly by attaching the bracket for 129°W (included in the kit) and a DP Dual or DP Single LNBF (not included).

••DPP 500+ LNBF is backwards compatible with the original DISH 500+ LNBF mounting bracket. If desired, the new DPP 500+ LNBF can be mounted on the old bracket once the FSS/DBS Dual Band LNBF and DP Dual LNBF are removed.



Installation Considerations

••The peaking angles used for pointing a DISH 1000+ are slightly different than the DISH 500+. Use the correct angles from the Installation Instructions.

••Peak on 118.7°W (Port 3) using a meter. Run a check switch, and then verify the signal on 110°W, 119°W, and 118.7°W (and 129°W for DISH 1000+) within the receiver's Point Dish screen. A software download and second check switch may be required to see all of the orbital locations.

••If your peaking meter does not output at least 600 mA of current, connect a receiver to 110°W (Port 2) of the LNBF to power the LNBF while peaking.

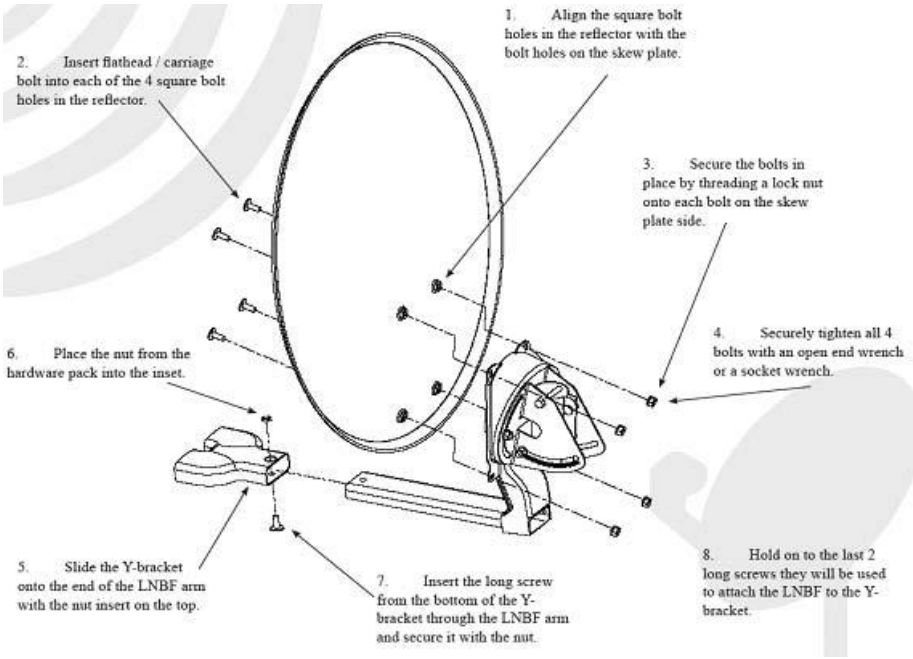
••A separate DP Dual LNBF is used for the 129°W orbital location; the DPP 500+ kit includes the LNBF mounting bracket.

••The only switch compatible with the DPP 500+ LNBF is the DPP44 Switch. The LNBF's LNB In port is disabled when connected to the switch.

••The DPP 500+ can be used for up to three receivers; for more than three receivers, use a DPP44 Switch

DISH 500

Antenna Assembly


1. Align the square bolt holes in the reflector with the bolt holes on the skew plate.
2. Insert flathead / carriage bolt into each of the 4 square bolt holes in the reflector.
3. Secure the bolts in place by threading a lock nut onto each bolt on the skew plate side.
4. Securely tighten all 4 bolts with an open end wrench or a socket wrench.
5. Slide the Y-bracket onto the end of the LNBF arm with the nut insert on the top.
6. Place the nut from the hardware pack into the inset.
7. Insert the long screw from the bottom of the Y-bracket through the LNBF arm and secure it with the nut.
8. Hold on to the last 2 long screws they will be used to attach the LNBF to the Y-bracket.

Assembly Instructions

1. Align the square bolt holes in the reflector with the bolt holes on the skew plate.
2. Insert flat head/carriage bolt into each of the 4 square bolt holes in the reflector.
3. Secure the bolts in place by threading a lock nut onto each bolt on the skew plate side.
4. Securely tighten all 4 bolts with an open end wrench or a socket wrench.
5. Slide the Y-bracket onto the end of the LNBF arm with the nut insert on the top.
6. Place the nut from the hardware pack into the inset.
7. Insert the long screw from the bottom of the Y-bracket through the LNBF arm and secure it with the nut.
8. Hold on to the last 2 long screws they will be used to attach the LNBF to the Y-bracket

Pointing and Peaking

1. Enter the correct equipment information.
2. Enter the ZIP Code.
3. Set the Skew and Elevation.
4. Connect an RG-6 coaxial cable jumper between the Super Buddy, satellite meter and the switch or LNBF.
5. Power the LNBF.
6. Point the dish.
7. Peak the dish using Limit Scan
8. Obtain a maximized and locked signal on the verified correct satellite locations.
9. Complete a Proof of Performance Scan and save the results.

DISH 1000.2

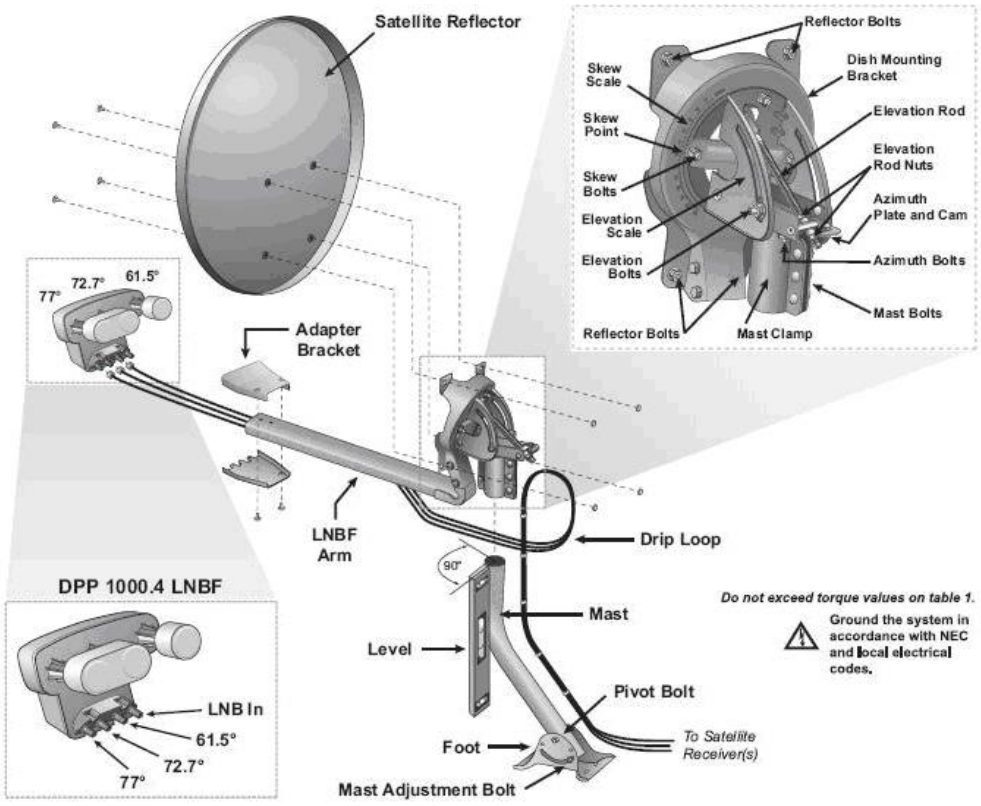
Antenna Assembly

Assembly Instructions

1. Align the square bolt holes in the reflector with the bolt holes on the skew plate.
2. Insert flat head/carriage bolt into each of the square bolt holes in the reflector.
3. Secure the bolts in place by threading a lock nut onto each bolt on the skew plate side.
4. Securely tighten all 4 bolts with an open end wrench or a socket wrench.
5. Split the LNBF bracket into the top and bottom halves.
6. Reconnect the LNBF bracket onto the end of the LNBF arm with the round tabs into the guide holes on either side of the arm with the raised text on the top.
7. Place the nuts from the hardware pack into the inserts.
8. Insert the medium length screws from the bottom of the LNBF bracket and secure them with the nuts.
9. Hold on to the 3 long screws they will be used to attach the LNBF to the LNBF bracket.

Pointing and Peaking

1. Enter the correct equipment information.
2. Enter the ZIP Code.
3. Set the Skew and Elevation.
4. Connect an RG-6 coaxial cable jumper between the Super Buddy, satellite meter and the switch or LNBF.
5. Power the LNBF.
6. Point the dish.
7. Peak the dish using Limit Scan
8. Obtain a maximized and locked signal on the verified correct satellite locations.
9. Complete a Proof of Performance Scan and save the results.

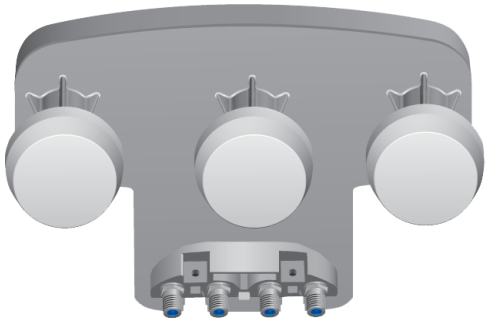


DPP EA Twin

Orbitals	Outputs	Inputs	Switch	Max Receivers	Reflectors
61.5°, 72.7°	3	No	DPP 44	3 single tuners or 3 dual tuners (Hopper capable)	1000.2

DPP 1000.2 WA

Orbitals	Outputs	Inputs	Switch	Max Receivers	Reflectors	Notes
110°, 119°, 129°	3	Yes	DPP 44	3 single tuners or 3 dual tuners (Hopper capable)	500+	Unlike DP 500+/1000+ a switch is not required for operation.



1000.4 Dish

Antenna Assembly

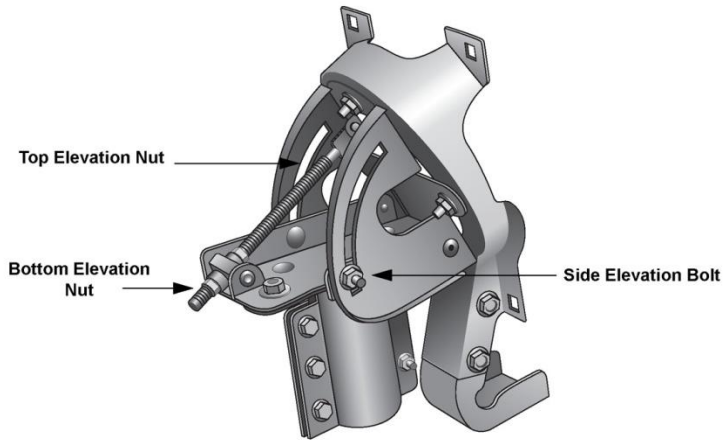
Assembly Instructions

1. Find Azimuth/Elevation/Skew angles for your location.
2. Find a location for the dish antenna with a clear line of sight and a sturdy mounting surface.
3. Mount the mast, making sure it is absolutely vertical. Attach struts to the mast, using the strut instructions.
4. Assemble the dish antenna, setting the skew and elevation angles in the process.
5. Mount the dish antenna on the mast and point the dish to the azimuth angle.
6. Run cables between the dish antenna and the receiver(s), leaving a service loop around the dish mounting bracket and attaching cables to the mast using zip ties.

Point and Peak Instructions

Rough Point and Peak

1. Using a peaking meter attached to the DPP 1000.4 LNBF PORT 2, rough peak the dish on 72.7°W using transponder 13, 19, or 21 for maximum strength. Lock the mast clamp bolts and re-confirm signal.



Fine Tuning the Elevation Angle

Fine-Tuning Elevation and Azimuth

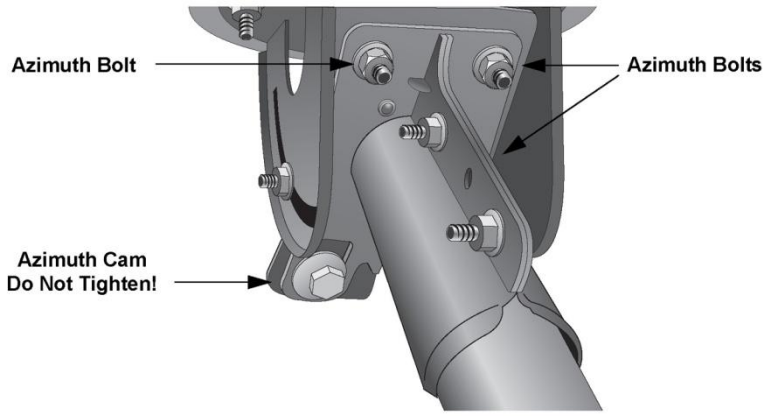
1. Using the elevation rod, fine-tune the elevation angle to achieve maximum signal using the following sweep and count method.
    - Using a 1/2” wrench, loosen the top elevation nut to allow the dish to be moved up and down in elevation.
    - Turn the bottom nut in one direction until the signal drops off the meter.
    - Reverse the direction of the wrench while counting the number of turns it takes to have the signal drop off in the opposite direction.

- Turn the adjuster back once again in the opposite direction by one-half the total number of turns to center the dish on the signal beam.

2. Tighten the top elevation rod nut, and then tighten the side elevation bolts. Reconfirm signal using the push pull method after tightening all elevation bolts.
3. With the signal meter still connected, using the azimuth fine-tune cam, fine-tune the azimuth angle to achieve maximum signal using the following method.
    - First, loosen the three azimuth plate bolts labeled with a 'T' just enough to allow the two azimuth plates to rotate.
    - Using the 1/2" wrench slowly turn the cam adjuster clockwise.
    - Watch the signal meter for value changes.
    - Rotate the cam clockwise until the highest possible signal is reached, repeat rotations if necessary.
    - IMPORTANT: Do not tighten the azimuth fine-tune cam.
4. Tighten the three azimuth plate bolts labeled with a 'T' and reconfirm signal using the push pull method.

Complete Assembly

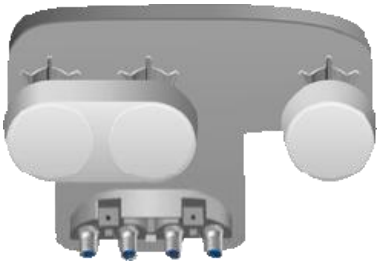
1. Connect the receiver cable(s) to the DPP 1000.4 LNBF PORT 1 (and PORT 2 and PORT 3, as necessary).
2. Run Check Switch test and confirm 61.5°W, 72.7°W, and 77°W reception.
3. Take a software download, if you didn't already.
4. Run a second Check Switch test and confirm 61.5ºW, 72.7ºW, and 77° reception.
5. Install additional receiver(s), if necessary.
6. If applicable, connect a second satellite dish to the DPP 1000.4 LNBF's LNB IN port.



Fine Tuning the Azimuth Angle

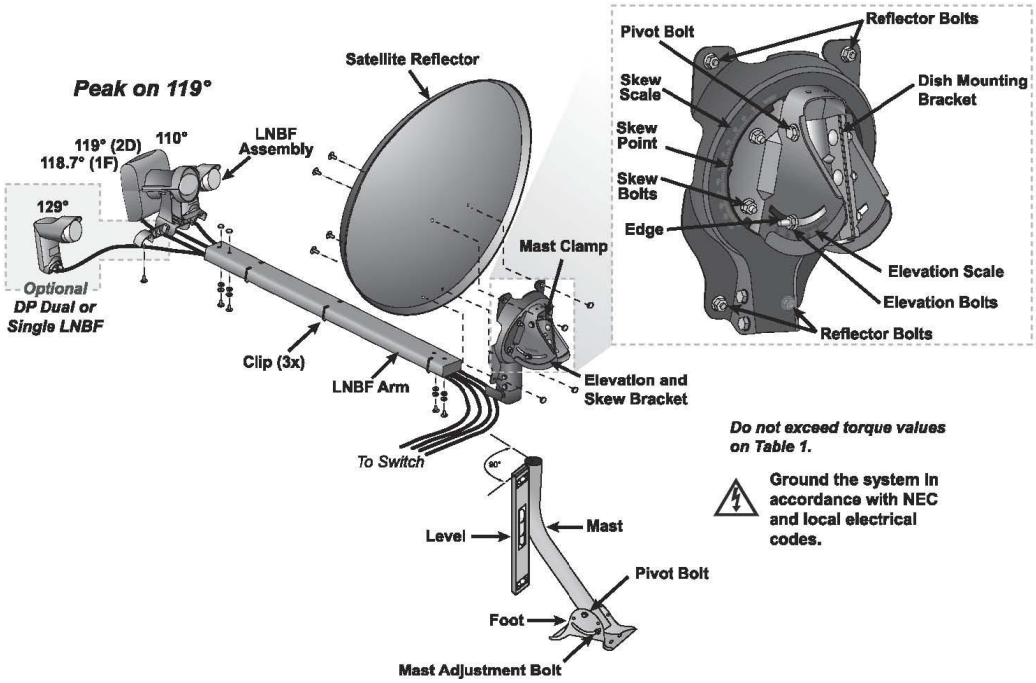
DPP 1000.4

Orbitals	Outputs	Inputs	Switch	Max Receivers	Reflectors	Notes
61.5°, 72.7°, 77°	3	Yes	DPP 44	3 single tuners or 3 dual tuners (Hopper capable)	1000.4 or 500+ repoint kit	When connected to a DPP 44 the LNB In Port is disabled.



DISH 500+/1000+

Antenna Assembly



Assembly Instructions

1. Add the skew plate and LNBF arm to the reflector.
2. Place the four skew bolts and tighten them.
3. Add the bracket to the end of the LNBF arm.
4. Place the bracket screw and tighten it.
5. Add the LNBF to the end of the bracket.
6. Connect the coaxial cable to port 1 of the LNBF.
7. Place the LNBF screw and tighten it
8. Adjust the skew angle
9. Adjust the elevation angle

Pointing and Peaking

1. Enter the correct equipment information.
2. Enter the ZIP Code.
3. Set the Skew and Elevation.
4. Connect an RG-6 coaxial cable jumper between the Super Buddy, satellite meter and the switch or LNBF.
5. Power the LNBF.
6. Point the dish.
7. Peak the dish using Limit Scan
8. Obtain a maximized and locked signal on the verified correct satellite locations.
9. Complete a Proof of Performance Scan and save the results

Site Survey

Customer Meet and Greet

Did You…	Yes/No
Check direction house faces in relation to southern satellite signal	Y ___ N ___
Check for an installed antenna that you can see from the street	Y ___ N ___
Check for obstructions on the property to the Southern sky	Y ___ N ___
Have the work order with you	Y ___ N ___
Have the Site survey with you	Y ___ N ___
Introduce yourselves	Y ___ N ___
Identify they are with DISH Network	Y ___ N ___
Explain why they were there	Y ___ N ___
Ask if the customer is home owner	Y ___ N ___
Identify the installation job they were there to perform	Y ___ N ___
Confirm the programming the customer had ordered	Y ___ N ___
Verify the equipment they had ordered	Y ___ N ___
Discuss receiver locations with customer	Y ___ N ___

Interior Site Survey Checklist

Interior: Did You…	Yes/No
Check the receiver locations	Y ___ N ___
Check the receiver model numbers	Y ___ N ___
Determine usable existing interior cable	Y ___ N ___
Plan for cable routing	Y ___ N ___
Check for phone line or Cat-5 Ethernet per receiver	Y ___ N ___
Check for electrical outlet for each receiver	Y ___ N ___
Determine no plumbing, HVAC or wiring interference	Y ___ N ___
Determine if customer has any existing TV services that need to be maintained or integrated	Y ___ N ___
Determine need for drilling or possible damage to the customer home	Y ___ N ___
Check for safety concerns	Y ___ N ___
List items to discuss with customer	Y ___ N ___

Site Survey

Exterior Site Survey

Exterior: Did You…	Yes/No
Check if existing exterior cables usable	Y ___ N ___
Check for grounding location	Y ___ N ___
Determine mounting options	Y ___ N ___
Check for Line of Sight	Y ___ N ___
Check for safety concerns	Y ___ N ___
Check for accessibility	Y ___ N ___
Consider aesthetics	Y ___ N ___
Consider customer preferences	Y ___ N ___
Develop two mounting locations if possible	Y ___ N ___
Determine what antenna and mount type to use	Y ___ N ___
Determine if switch is needed	Y ___ N ___
Record all concerns on your Installation Plan at the bottom under, Items to Discuss with Customer	Y ___ N ___

Installation Plan Presentation to Customer Checklist

Did You…	Yes/No	Comments
Display customer service skills	Y ___ N ___	
Explain two possible installation locations	Y ___ N ___	
Explain location of cable runs	Y ___ N ___	
Explain why these locations are required	Y ___ N ___	
Explain concerns about customer maintaining antenna	Y ___ N ___	
Address concerns about aesthetics	Y ___ N ___	

Time Saving Tip: While conducting your site survey, utilize the site survey form, and take detailed notes specifically on what items you'll need to complete the install. For example, how many bushings, wall plates, barrels, connector, type, and quantity of cable fasteners. Note any "specialty items" needed. Once back at the van use these notes as a "job inventory" sheet. Knowing exactly what you'll need for the entire job and stocking yourself accordingly can save you from making multiple trips to back to the van - saving time.

Time Saving Tip: Make sure that the customer agrees to all parts of your installation plan before you bring out any equipment, cabling, tools, and start mounting the antenna. This will save you time moving or re-routing cable if the customer does not like where the antenna is mounted or how the cables run.

Mounting

Direct to Wall

1. Locate the stud using the approved stud finder
   - Locate the center of the stud
   - Do not mount the dish near the edge of the stud
2. Position and hold the footplate so it is centered on a stud
   - Use a level to ensure the footplate is vertical
   - With a pencil, mark all six holes of the footplate to pilot-drill
   - Mark the four outermost round corner holes
   - Mark the two center holes
3. Remove the footplate and pilot-drill the holes
   - Use the 7/32” drill bit in the cordless hammer drill
   - Drill the center holes to a 2 ½” depth
   - Drill the corner holes to a 1 ½” depth
4. Fill each pilot-drilled hole approximately ¾ of the way full with silicone sealant
5. Place the footplate back on the wall
6. Insert the ½” nut driver into the cordless drill
   - Select the drill icon and set to slow speed
7. Tighten the lag screws to secure the footplate to the wall
8. Use 3” x 5/16” lag screws for the center holes
9. Use 2” x 5/16” lag screws for the corner holes
   - Remember the center lag screws must be in the stud.
10. Do the final tightening of the footplate screws with a wrench or ratchet and tighten until they are snug against the footplate
11. Attach and plumb the mast to the footplate

Brick, Cinderblock, and Concrete

1. Place the footplate against the wall in the desired location
   - Do not place more than two holes per block/brick
   - If the wall is brick, place the footplate as close to the center of bricks as possible
2. Using the torpedo level, vertically level the footplate
3. Using a marker or pencil, mark the four outermost round corner holes
4. Remove the footplate
5. Drill the marked holes
   - Use cordless drill; set to hammer drill and high-speed selections
   - Use ½-inch masonry bit
   - Drill holes to a 3-inch depth
6. Hammer a lag shield into each hole until it is flush with the surface
   - A lag shield is used under the foot /mast assembly to seal and protect the mounting holes
   - An expansion anchor shield used with lag screws
   - A metal shield guide used when drilling into masonry surface
7. Completely fill the holes with clear silicone
8. Place the footplate against the wall; align the four corners to the holes
9. Mount the footplate
   - Use a ½-inch socket and ratchet
   - Use 2-inch x 5/16-inch lag screws
   - Tighten the lag screws slowly
10. Plumb the mast
    - Level the mast from at least two sides
11. Install support struts on dish antennas DISH 500+ and larger
    - Install the struts after mount installation is complete
    - Where should you not mount the strut? Do not mount on or around the mortar

Mount: Telescoping Wall

1. Using a stud finder, locate a stud
2. Place the mounting base at the desired location
   - Define where the base plate on the mounting insert should be mounted, high or low
   - High mounted base plate
   - The base plate is mounted high if the mounting holes closest to the insert post face down
   - Low mounted base plate
   - The base plate is mounted low if the mounting holes closest to the insert post face up
3. Level the mounting base
4. Mark the base with marker or pencil
5. Remove the mounting base
6. Pre-drill the marked holes
7. Fill holes ¾ full with silicone
8. Mount the mounting base
9. Install the mounting insert
10. Mount the footplate to the base plate on the mounting insert using the included hardware
    - Be sure to secure the footplate snugly against the wall surface so the installation remains safe and secure
    - Plumb the mast/footplate
    - Tighten the mast/footplate set screws on the mounting base

Mount: VERSATILE™

1. Place the base plate in the desired location
    - Locate along the roof eave, accessible from a ladder
    - Affixed on tiles located two or more rows from the roof eave, having an unencumbered roof tile surface area of at least sixteen square feet
    - NEVER affix the VERSATILE Mount on any existing cracked, broken, or cut tiles, or on tiles located within three (3) feet of metal flashing, or along hips, ridges, or valleys of the roof body
2. Install the support tongues
    - Gently lift the tiles in the row above the area you selected for the Base Plate, and slide a Support Tongue under them until the Support Tongue's back hook reaches the back edge of the tile below it
    - Lower the Support Tongue then pull it back towards you until the hook has seated itself to the tile below
    - Repeat with other supplied Support Tongues
3. Install the base plate
    - Place Base Plate so its center is above the joint of the two tiles below it
    - Slightly lift the tiles below the Base Plate and slide its hooks under the tile
    - Install the stiffener bars and fasten together
    - Place Stiffener Bar on top of Support Tongues
    - The center of each Stiffener Bar should be above the joint of the two tiles below it.
    - Line up Te pre-drilled holes in the Stiffener Bar and Support Tongue
    - Insert supplied hardware into holes of Base Plate, Support Tongues, and Stiffener Bars
    - Tighten with a wrench until the mounting assembly is level and clamped firmly in place
4. Attach the footplate to the VERSATILE Mount

Mount: Soffit

Overview

Using the Mounting Priority Chart, you'll find that almost *all* singlefamily home installations can be completed by using one of the first seven options: direct to wall, overhang, the fascia mounts, angled fascia, under eave, the direct to brick mount, or the telescoping mount.

In rare situations, we may need to use the eighth option on the priority chart, which is the soffit wall mount. If you have reached this option, doublecheck that you've considered all line of sight options for higher priority mounts.

What Changed

The standards for mounting have not changed; however, mounting continues to be one of the most common fail points for the standard installation. Out of all QA inspections, more than 20 percent have mounting failures. Mounting is also responsible for 20 percent of all Trouble Calls.

Why It's Important

A proper dish mount is one of the best ways to ensure our customers enjoy trouble-free DISH service at their homes. A sturdy, properly installed mount will:

- Help prevent damage to the customer's home
- Minimize the need for return visits to remedy signal loss
- Improve the customer's overall service experience

What I Need to Do

Assembly
Assemble the mount at the back of the van. Align the mounting insert with the insert at the top. Then align the footplate with the mounting insert.

Use the supplied hardware to attach the footplate, and tighten all of the hardwa

Before leaving the vehicle, be sure you have everything you'll need. For the soffit mount, you'll need silicone, the 6inch Phillips head drill bit, fivewood screws (which come packaged with the mount).

Mounting

To install the soffit mount, you first need to locate and mark the rafter. Use the stud finder or visual cues such as gutter mounts and nails to help locate a rafter properly.

•After marking the rafter, apply silicone around the five holes on the bottom of the soffit base
•Drive in a 3inch wood screw into the rear center hole. Then, drive a 3inch wood screw into the holes
• Next, slide the mounting insert into the soffit base and level the mast
•Tighten the set screws with the 5/32'' Allen wrench
•Make sure the mast is level and tighten the hardware with the 7/16'' wrench
•Finally, place the dish on the mast

Mount: Under Eave

1. Locate a rafter stud
2. Place soffit mounting base away from house
    - Face front of soffit mounting base away from house
    - Touch front of soffit mounting base to edge of fascia board
    - Center front of soffit mounting base over stud
    - Center back of soffit mounting base over stud.
3. Mount the soffit mounting base.
    - Place and halfway tighten one #10 3-inch wood screw in rear center hole.
    - Place and halfway tighten the one #10 3-inch wood screw in each of four angled holes of soffit mounting base
    - Tighten front screws
    - Tighten back screws
4. Using included bolts, washers, and nuts, attach footplate to base plate on mounting insert
5. Attach footplate to mounting insert
6. Install mounting insert
    - Slide mounting insert with attached dish mast into soffit mounting base until desired depth is achieved
    - Vertically level dish mast
    - Tighten both mast screws on soffit mounting base

Mount: Eave/Gable Fascia

Eave Fascia Installation Instructions

1. Locate the end of the roof rafter behind the fascia board and mark the centerline of the roof rafter on it
2. Position the mounting plate on the fascia board just below the roof flashing

IMPORTANT: The flat side of the fascia mount must be against the fascia board

- The center holes in the mount plate must be placed over the centerline of the roof rafter previously marked

3. Place a level on the side of the mounting plate, level and mark the top two corner holes and top three center holes over the rafter end

Note: Depending upon the width of the fascia board, the bottom center hole may not be used to attach the plate to the structure

4. Drill a pilot hole on each of the marked mounting holes using a 7/32" drill bit for the 5/16" X 3" lag screws supplied
5. Using the machine bolts, washers, and nuts supplied, attach the dish foot plate to the Fascia Mounting Plate using the two lower corner holes and the bottom center hole if it is not used to attach the plate to the fascia
   - At this time, hand tighten the hardware only
6. Position the dish foot plate and mounting plate assembly over the mounting locations
7. Using the lag screws and washers supplied, thread the lag screws into the previously drilled pilot holes and tighten
8. Tighten the remaining machine bolts installed in step 5 to connect the dish mounting base to the mounting plate

Gable Fascia Installation Instructions

1. Position the mounting plate on the fascia board just below the roof flashing

IMPORTANT: The flat side of the fascia mount must be against the fascia board.

2. Place a level on the side or across the bottom edge of the mounting plate, level, and mark the top two corner holes and top three center holes on the fascia board.

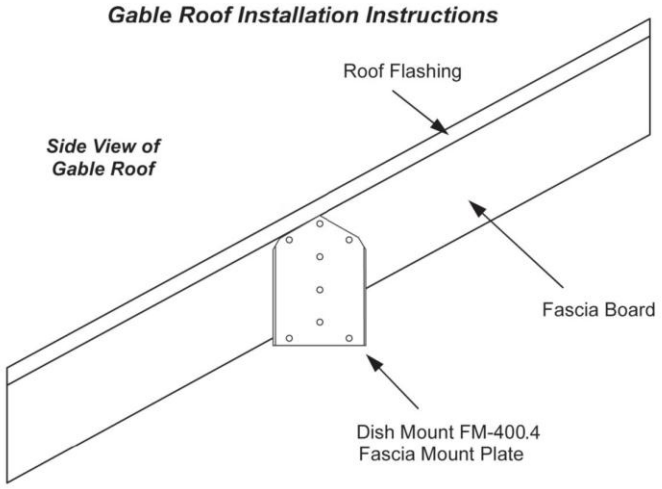
Note: Depending upon the width of the fascia board, or pitch of the roof, the bottom center hole may not be used to attach the plate to the structure.

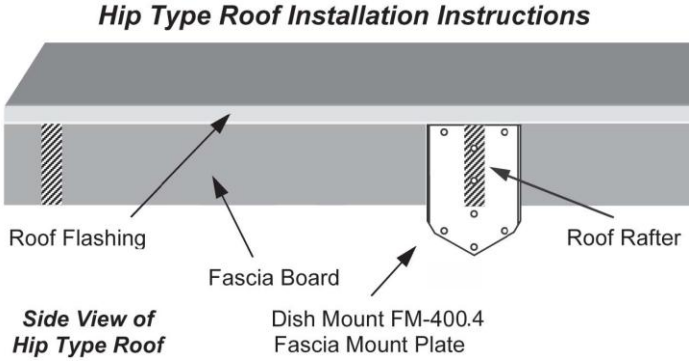
3. Drill a pilot hole on each of the marked mounting holes using a 7/32" drill bit for the 5/16" X 3" lag screws supplied
4. Using the machine bolts, washers, and nuts supplied, attach the dish foot plate to the Fascia Mounting Plate using the two lower corner holes and the bottom center hole(s) if it is not used to attach the plate to the fascia
   - At this time, hand tighten the hardware only
5. Position the dish foot plate and mounting plate assembly over the mounting locations
6. Using the lag screws and washers supplied, thread the lag screws into the previously drilled pilot holes and tighten
7. Tighten the remaining machine bolts installed in step 4 to connect the dish mounting base

to the mounting plate

Installation Tips

- When you can only screw into the fascia board, use 1.5” lag screws
- In the center holes, use 3” lag screws to screw into a rafter or stud
- Use the 5/16” hardware (included in the kit) for the lower portion of the mounting plate
- In the center hole, if possible, insert a 3” lag screw into a rafter or stud
- Make sure that the flat side of the fascia mount is against the mounting surface and the raised lip edges are facing away from the structure





Installing Eave/Gable/Fascia Mount to a 4 X 4 post on an existing support structure:

1. Evaluate the 4 X 4 post and existing support structure

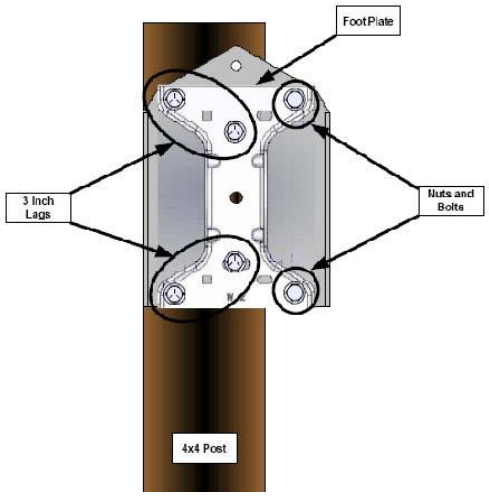
Note: If the structure or post does not meet these specifications, it is not an acceptable mounting solution

- 4 X 4 post is secured in concrete
- Structure and 4 X 4 post is in good condition, not rotted, especially at the base
- 4 X 4 post does not restrict pedestrian walkways or create a safety hazard

Do NOT use the following:

- Free standing 4 x 4 posts
- Fence posts

2. Fully discuss all possible mounting options with the customer before selecting the final mounting location
3. Position the mounting plate on the 4 x 4 wooden post at the desired height
   - For aesthetic purposes, point the plate up
   - The ribs must be facing away from the post
4. Verify the mounting plate is level using a torpedo level
5. Mark four mounting holes on the 4 x 4 wooden post
   - Two center and two outer
6. To ensure you don't split the wood, drill a pilot hole for each of the marked mounting holes using a 7/32" wood bit
7. Fill the pilot holes with silicone sealant, making sure not to over fill past the hole opening
8. Attach the mast foot plate to the Fascia/Gable Mount's outer holes using the bolts, washers, and nuts included with the mount
9. Position the mounting plate and mast footplate over the pre drilled holes
10. Use four 3 inch lags to secure the mounting plate and mast footplate to the 4 x 4 wooden post



Mount: Angled Fascia

1. Locate the end of the roof rafter behind the fascia board
2. Mark the centerline of the roof rafter on the fascia board
3. Position the angled fascia mounting plate on the fascia board just below the roof flashing
4. Verify that the mounting plate is level using a torpedo level
5. Mark the six mounting holes on the fascia board
6. Pilot drill a hole on each of the marked mounting holes using a 7/32” wood bit
7. Fill the pilot holes with silicone sealant, making sure not to over fill past the hole opening
8. Position the angled fascia mounting plate over the pilot drilled holes
9. Using the provided lag bolts and washers, thread the lag bolts into the drilled holes and tighten them
    - Two lag bolts run through the center of the mount and mast.
    - The bottom lag bolt secures the mast to the mount. The top lag bolt secures the mast in position once plumbed
10. Use the remaining carriage bolts to attach the arm or mast to the angled fascia plate
11. Plumb the mast on a minimum of two sides.

Mount: Asphalt Roof

1. Using a stud finder, locate a rafter
2. Place footplate against roof in the desired location on rafter
3. Using torpedo level, vertically level footplate
4. Using a marker or pencil, mark all six holes
5. Remove footplate.
6. Pilot drill marked holes
    - Use cordless drill
    - Use 7/32-inch drill bit
    - Drill center holes to 2½-inch depth
    - Drill corner holes to 1½-inch depth
7. Cover each hole with a large piece of pitch patch
8. Place footplate against roof, aligned to holes
9. Mount the footplate
    - Use ½-inch socket and ratchet
    - Use 3-inch x 5/16-inch lag screws for center holes
    - Use 2-inch x 5/16-inch lag screws for corner holes
10. Tighten lag screws slowly, so don't damage/strip lag screws
11. Plumb mast
12. Using a torpedo level, vertically level mast
13. Struts must be installed on dish antennas DISH 500+ and larger
14. Mount footplate to roof

DNS Weekly Training

Mounting Series: Quality Dish Mounting

RSP and Subcontractor
11/28/11

Overview

The mounting series will prepare you to incorporate knowledge of basic home construction and mounting to make the best mounting decision. Basic Home Construction laid the foundation for understanding where we can and cannot mount a dish. The next video in the series, "Quality Mount," will help technicians understand what goes into providing the sturdiest, most trouble-free mount possible for our customers.

What Changed

The standards for mounting have not changed. However, mounting continues to be one of the most common fail points for the standard installation. Out of all QA inspections, 18% have mounting failures. This is responsible for 20% of all Trouble Calls. This series is intended to address these issues.

Why It's Important

A proper dish mount is one of the keys to ensuring our customers enjoy trouble-free DISH service at their homes. A sturdy, properly-installed mount will:

- Help prevent damage to the customer's home
- Avoid return visits to remedy signal loss
- Mitigate failed quality assurance inspections
- Improve the customer's overall service experience

What I Need To Know

Providing a Quality Mount Includes:

- Mounting to the correct surface with the correct mount
- Ensuring clear line of sight
- Properly securing the dish to the mounting surface

Line of Sight

In the last videos, we discussed the types of surfaces that we can and cannot mount to. After considering the mounting surface, determine line of sight. It is very important to make sure the mount location has clear line of sight to the satellites—at least 5 degrees of clearance on all sides.

- Consider the growth of any foliage over the next few years. This could potentially impede line of sight in the future. If possible, avoid any location that may be affected by future growth, even if you feel that the customer's signal might be unaffected for a few years
- If it's late fall or winter, trees may not have as many leaves and may not seem to be an obstruction. Consider how the tree could look at full bloom when determining line of sight

Quality Mount

Level Mast

The direct-to-wall mount has a wide hole for the bottom center screw. This allows for a little movement to make sure the mast is level. Some of the other mounts do not afford you this luxury. The mast will need to be level when marking the holes to be pre-drilled.

- It's always better to double check that the mast is level before drilling. Remember the saying: measure twice, cut once
- Generally, when the footplate is level, the mast is level as well. But this is not always the case
- To help get optimal signal, the mast needs to be level. Issues with pointing and peaking often stem from a mast not being level

Lag Screws

It is very important to use the correct number of lag screws for each type of mount.

Mount	Lag Screws Required
Direct-to-Wall	6
Direct-to-Brick	4
Fascia	4 or 5, depending on the configuration
Angled Fascia	6
Under-Eave	4
Telescoping	6

- Each mount is structurally tested in wind tunnels to check for durability in extreme conditions. This helps determine the number of lag screws for each mount. Using the correct number of lag screws will ensure standards that were determined during testing are met
- Additionally, the center two holes MUST align with a stud. At least two lag screws must be driven into a stud or rafter to effectively secure the mount to the house
    - Mounts that do not have at least two lag screws in a stud are TWICE as likely to result in the dish shifting, and can result in a Trouble Call
- When driving in the lag screws, it is important to pre-drill holes into the stud. The lag screw is 5/16" thick. If the lag screw is driven directly into a stud without pre-drilling, the lag screw will cause the stud to crack and split
    - To avoid this, simply pre-drill a hole using the 7/16" drill bit. This drill bit will take out enough of the wood so that the lag screw is not displacing as much. It will also leave enough for the lag screw to grab and hold on to the stud
    - Being off by more than a half inch from the center of the stud can cause the lag screw to slide and move out of the stud
        - It will be difficult to determine if lag has traveled out of the stud. It might feel tight and secure, but behind the wall the lag may have actually traveled half way out of the stud

Quality Mount

Sealant

Sealant helps prevent water from getting into the holes that have been drilled. This will also prevent water from getting in the stud and ruining the structural integrity of the walls or roof.

Wall

- When mounting on a wall, fill each pre-drilled hole with silicone sealant. This will completely seal the hole in the stud so that water cannot get inside
- Apply silicone to the four corner holes on the bottom of the footplate. This will completely seal the hole so that water cannot get inside

Roof

- When mounting on a roof, seal holes using pitch patch. Roll up the pitch patch into a ball with a quarter-inch tip. With the tip end first, push the pitch patch into the pre-drilled hole in the rafter
  - This will get the appropriate amount of pitch patch deep into the rafter. It will also leave the correct amount of pitch patch to seal the top of the hole
- On the four corner holes, apply the pitch patch to the bottom of the footplate. These holes do not have a rafter that needs to be filled with pitch patch. Seal the entrance of the hole instead

Secure the Mount

- Drive in the lag screws perpendicular to the wall. If this is not done correctly, the lag screws will not lay flush with the footplate
  - The electric drill is not meant to torque the lag screws tight enough. Make sure to do the final tightening with your half inch wrench
- Tighten all lag screws snug, plus a quarter turn
  - Tests have shown that mounts that are tightened by only using the drill, or by not adding the extra one quarter turn, are TWICE as likely to move out of alignment. This can eventually result in a Trouble Call
- Tighten the pivot bolts. The pivot bolts must be tight and secure, just like the rest of the mount
  - The material of the mast is only 0.05 inches thick, and the mast can be bent or warped if the pivot bolts are over-tightened

Mount: Pole

1. Dig the Hole a minimum 7 inches wide and 3 feet deep (or below the local frost line)
2. Prepare the Pole
    - To prevent twisting prepare a pole for mounting by
    - Pounding the base of the pole into an oval shape
    - Drilling two or three 3 inch lag screws in base of pole below cement line
    - Drill two 3/16-inch holes in pole 3 inches up from ground level to allow water to drain out of pole
3. Add Concrete
    - Always follow proper safety procedures while using cement
    - Eye Protection, gloves, and dust mask
    - Mix concrete in a 5-gallon bucket with shovel/or pour the mix into the hole and add water
    - Place mixed cement into hole
    - Pat surface of concrete with backside of shovel until all rocks are pushed into concrete, concrete tapers down from pole 2 inches above ground, and surface of concrete is smooth
4. Level the Pole
    - Take readings from two locations 90 degrees apart on side of pole to ensure complete leveling of pole
    - Check readings periodically while cement is drying
    - Immediately wash your hands after working with cement
    - While waiting at least 40-60 minutes (depending upon type of concrete mix used) for cement to dry, work on other aspects of installation before mounting dish to pole. (You must completed step 5 before cement dries.)
5. Attach PVC Angle (Sweep)
    - While cement is still wet, attach a piece of PVC (90° elbow) 1 inch in diameter to pipe where cable enters ground, commonly referred to as a sweep
6. Route Cable
    - Route cable through sweep conduit to provide protection from lawn mowers, weed eaters, squirrels, etc.
    - Route cable from dish by attaching coaxial cable to pole using cable ties
    - Dig a trench to house for burial cable
    - Dig to depth established by local underground utilities
    - Direct burial cable (orange cable) is required in all applications requiring the buried cable when not in conduit

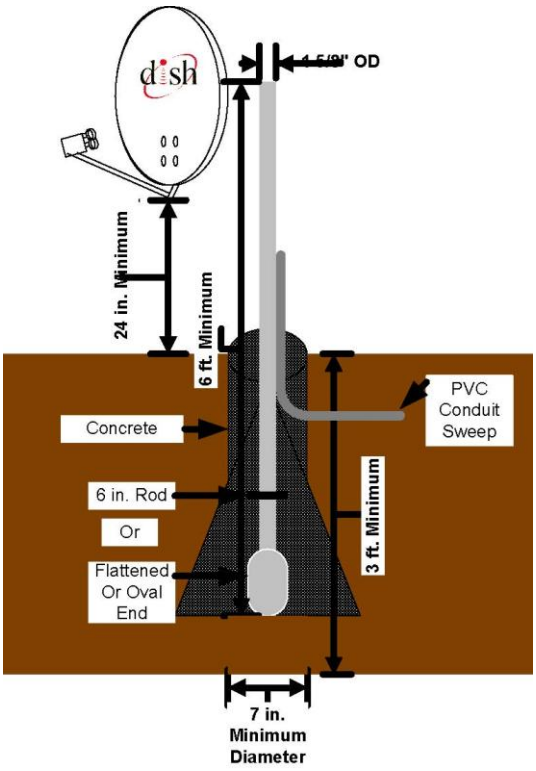
Mount Pole Work Order Process

Initial Truck Roll:

1. Install a permanent pole mount only if DNS standards are met including marked utilities and the hole already dug to required dimensions
2. Call FSM for approval to complete a temporary mount
3. Contact the Underground Utility Company (UUC) if utility lines are not marked
4. Contact Dispatch to set up subsequent pole mount work order after completion of temporary mount install
5. Install a temporary mount if approved
6. Notate the customer account

Subsequent Truck Roll:

1. Confirm utility markings
2. Install a permanent pole mount
3. Return temporary mount to office



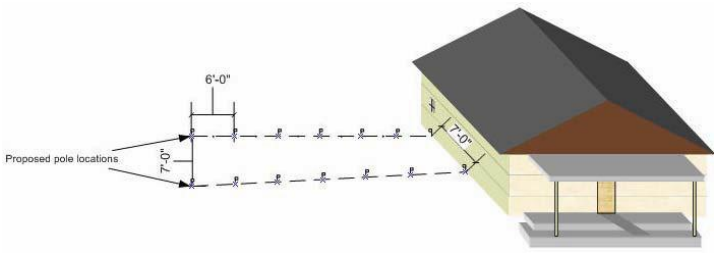
Utiltity Marker Flags

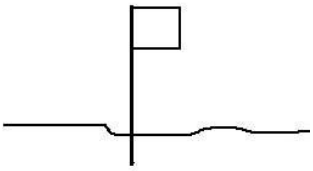
Once the need to dig or trench has been determined:

1. Identify two potential installation locations at least seven feet apart at both the proposed pole location and the point where the cable reaches the house
2. The technician will inform the customer that white flags will be placed in their yard to mark the proposed excavation site for the dish and cable trenching prior to marking by the Underground Utility Company
    - Explain that two locations have been marked to help prevent the need for a reschedule if there is a conflict due to utility lines
    - Explain that it is very important not to move or remove these flags prior to utility marking
3. Place one white marker flag at the proposed location of the pole mount one at the house and one flag approximately every six feet in between
    - There should be a minimum of three flags for each marked location
    - The flags should be inserted into the ground a minimum of four inches
    - In snowy conditions, ensure the flag has penetrated the ground and not just the snow layer
4. Contact the Underground Utility Company (811) to have utility lines marked
5. Continue with temporary mount installation

Truck roll to complete permanent installation:

1. Confirm utility markings
2. Retrieve white marker flags
3. Install permanent pole mount





4 inches minimum

Ground level

Mount: Non-Penetrating Roof

Overview

Using the Mounting Priority Chart, you'll find that almost all single-family home installations can be completed by using one of the first seven options: direct to wall, overhang, fascia mounts, under eave, the direct to brick mount, or the telescoping mount.
In rare situations, where the landlord requires that no holes are drilled into the home, and if the home has a flat roof, consider using the 10th option on the priority chart; the Non-Penetrating mount. Before installing this mount, double-check that you've considered all line of sight options for higher priority mounts.

What Changed

The standards for mounting have not changed; however, mounting continues to be one of the most common fail points for the standard installation. Out of all QA inspections, more than 20 percent have mounting failures. Mounting is also responsible for 20 percent of Trouble Calls.

Why It's Important

A proper dish mount is one of the best ways to ensure our customers will enjoy trouble-free DISH service at their homes. A sturdy, properly installed mount will:

- Help prevent damage to the customer's home
- Minimize the need for return visits to remedy signal loss
- Improve the customer's overall experience

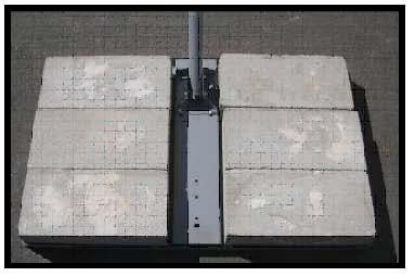
What I Need to Do

1. Take out the mount, the mat and the appropriate number of blocks from the vehicle
    - o The D500 and 1000.2 require 6 blocks
    - o The 1000.4 requires 7 blocks
    - o The D500+/D1000+/Super Dish require 9 blocks

2. Assemble the mount at the vehicle
3. Attach the mast/footplate to the mount
4. Find a suitable location to place the non-pen mount
5. Place the mat at the mounting location
6. Place the mount on the mat
7. Place the blocks on the mount as shown on the next page

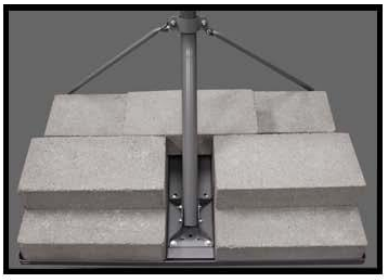
Block arrangement:

6 blocks



7 blocks

9 blocks



8. Level the mast and tighten hardware using a 7/16” wrench
9. Place the dish on the mast

Note:

- In the event that a non-pen is placed on the ground over grass or a dirt surface for a temp mount, the black rubber mat is not required
- Temporary mounts and mats must be returned to the office once the permanent mount is placed
- The D500/1000.2/1000.4 must be used with a short mast
- Using D500+ with a non-pen is only to be used as the last possible mounting option
- The 500+/1000+/Super dish require a long mast and struts

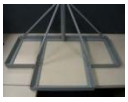
Mount: Rail

1. Determine proper location for Rail Mount on railing
    - Recommended location: where vertical rails intersect with either bottom or top horizontal rail
    - NEVER affix Rail Mount on railing rusted, bent, cracked, has deficient or broken welds/connections to top or bottom horizontal rails, or railing not structurally stable in connection to building
2. Place Plate #1 on top of Plate #2
    - Place first external tooth lock washer and then flat washer onto the ¼" x 20 x 1.5" Bolt
    - Then insert bolt/lock washer/flat washer assembly through slot in Plate #1 and thread into Plate #2
3. Set assembled plates at install location on railing
    - Adjust two plates so as to "lightly clamp" opposing edges of plate assembly to vertical rails and then tighten securely four ¼" x 20 x 1.5" bolts
4. Align Plate #3 with Plate #1/#2 on other side of railing
    - Ensure part label for Part #3 identifying "UP" is in proper direction
    - Insert slots of Plate #3 onto ¼" x 20 bolts from Plate #1/#2 assembly
    - Level Plate #3 and secure mount to railing by threading onto ¼" x 20 x 1.5" bolts, provided ¼" x 20 serrated hex nut
    - Securely tighten hardware on assembly and ensure both Rail Mount and railing are structurally sound
5. Lastly, seat mounting foot (not included) onto Plate #3 using the ¼" x 20 x 1/2" bolts with the external tooth lock washer and securely tighten

Mount Chart

Mount	Type	Acceptable Surfaces	Mount Locations	Atenna Rating	Safety Concerns
	Standard Mast	Fiber board, wood, brick, cinder block, concrete, asphalt roof	Approved vertical, horizontal or asphalt roof surface	All dishes Note: Struts required for 1000.4 Dish, DISH 500+/1000+	Structure should be solid, mast could be a bump hazard, ladder possibly needed
	Short Mast	Fiber board, wood, brick, cinder block, concrete, asphalt roof	Approved vertical, horizontal or asphalt roof surface	Prescribed for the 1000.4 Dish only	Structure should be solid, mast could be a bump hazard, ladder possibly needed
	Pole Mount	In ground	Approved in-ground location	All dishes Note: Must call Dig Safe (811) before installation	Could hit a gas/electrical line, possible tripping hazard
	Telescoping Wall Mount	Fiber board, wood, brick, concrete, cinder block	Approved vertical surface	Up to DISH 1000.2	Structure should be solid, mast could be a bump hazard, ladder needed
	Soffit Mount	Roof truss or other structural member under the soffit	Soffits	Up to DISH 1000.2	Structure should be solid, mast could be a bump hazard, ladder needed
	Under Eave Mount	Mounts to exposed under-eave rafter. Soffit framing members must be exposed	Soffits	Up to DISH 1000.2	Structure should be solid, ladder possibly needed

Mount	Type	Acceptable Surfaces	Mount Locations	Atenna Rating	Safety Concerns
	Angled Fascia Mount	Mount to stud, rafter tail, or structural member behind an angled fascia board	Angled fascia board	Up to DISH 1000.2	Structure should be solid, mast could be a bump hazard, ladder needed
	Eave/Gable Mount	Mount to stud, rafter tail, or structural member behind a fascia board,	Fascia board on end or gable, 4 x 4 wooden post (part of existing support structure)	Up to DISH 1000.4 with short mast	Structure should be solid, mast could be a bump hazard, ladder needed

	Railing Mount	Balcony rail	Balcony/ porch rail	Up to DISH 1000.4 with short mast	Structure should be solid
	Quick Pipe Adapter	Existing 2” or greater in diameter pole or pipe	C-Band or Prime Star antenna masts	Up to DISH 1000.2	Structure should be solid, not for use on vent pipes
	Universal Non-Penetrating Mount	Any flat surface	Flat roof	All dishes	Structure should be solid, ladder needed
	Non-Penetrating Patio Mount	Limited to semi-inclosed areas	Patios/decks	All dishes	Structure should be solid, requires proper block use
	VERSATILE Mount	High-profile, low-profile, flat concrete roofs	Concrete roof	Up to DISH 1000.2	Structure should be solid, mast is a bump hazard, ladder needed

Overview

This series will prepare you to incorporate knowledge of basic home construction and mounting to make the best mounting decision. To begin the series, we'll discuss the basic construction of a typical home. This is broken up into two parts: wall and roof.

What Changed

The standards for mounting have not changed. However, mounting continues to be one of the most common fail points for the standard installation. Mounting errors account for 18% of all failed QA inspections, and are responsible for 20% of all Trouble Calls. This series is intended to address this issue.

Why It's Important

A proper dish mount is one of the best ways to ensure our customers enjoy trouble-free DISH service at their homes. A sturdy, properly-installed mount will help prevent damage to the customer's home avoid return visits to remedy signal loss improve the customer's overall service experience, and help you avoid failed quality assurance inspections.

What I Need To Know

Wall Construction

For the purpose of mounting, we're most concerned with the frame of the house. Framing is similar to the skeleton in your own body. It provides a stable structure for the interior and exterior walls. The material used in the frame of each house tends to be region-specific, but most new homes are made from wooden framing.

The walls of a house typically have four main components: studs—with drywall, sheathing material, and siding. In between the studs is typically a layer of insulation for temperature control.

Studs are vertical and horizontal partitions that serve as a nailing base for the other components. They are usually spaced 16 inches apart (measured from center to center).

In the corners, the head of one wall overlaps the head of the next. These are nailed together to bind the walls. The corners can be constructed using four basic methods, but they all have at least three studs at the intersection.

Attached to the studs inside of the house, is drywall. Sometimes called sheetrock, drywall is usually a half-inch thick board made from gypsum. Drywall makes the visible side of a home's ceiling, and is usually painted and textured to make up the interior walls.

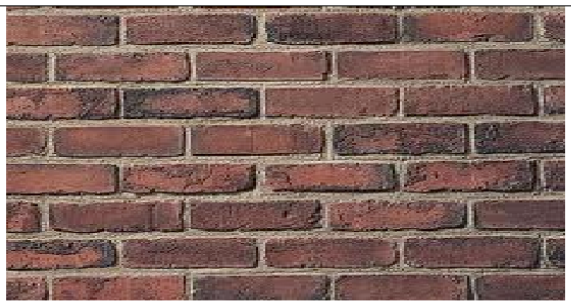
Structurally, drywall is not intended to support more than a few pounds of weight. It cannot support your weight or the weight of any structure mounted to it. For this reason, you must find a stud if any interior hardware mounting is required, for example a wall-mounted TV.

On the exterior side of the house, and also attached to the studs, is the sheathing. Sheathing is usually sheets of fiberboard or other materials used to insulate the wall. Like drywall, sheathing is not structurally strong enough to support any weight.

Types of Siding

The last layer of the wall is the siding. Siding is placed over the exterior sheathing, and becomes the final barrier between the outside elements, and the structure of the house.

Wood siding is long, flat boards overlapped to prevent moisture leakage. It is fastened with nails or screws in the same manner as roof shingles.



Brick siding is clay blocks fastened together with mortar built up against the outside of the wall.

Brick and stone veneer are pieces of fiberboard made to look like bricks and stones. The material is usually cemented to a backing on the outside of the wall.

Stucco siding is a textured mixture of mortar and other materials. It can be used on the inside and outside of the home.

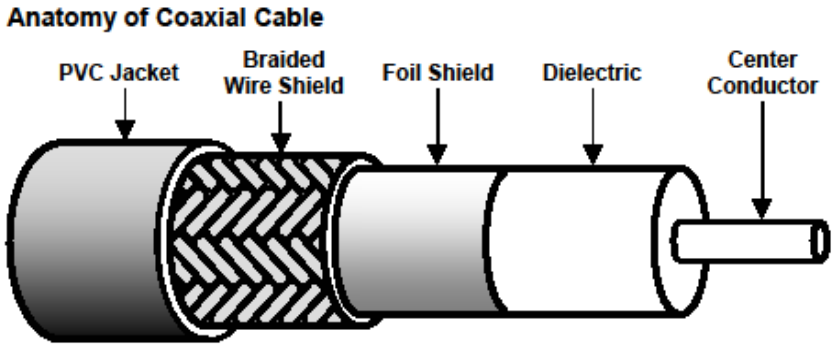
Metal and Vinyl siding is usually made of lightweight material that is overlapped and fastened together.

Concrete masonry walls are comprised of concrete blocks that are held together with mortar, and stacked and staggered. This type of wall is typically covered with a thin layer of stucco to hide the seams.

Even though the dish may appear to hold up when mounted to exterior siding, we cannot mount a dish without following the proper steps and using a stud as support. We can mount to concrete, brick, and wood siding. We can not mount to metal, vinyl or stucco, as drilling through these surfaces compromises their structural integrity. We'll get into more detail about the proper dish mounting techniques in a later video. But that's all for now in this part of basic home construction.

Cabling

Coaxial Cable
The satellite antenna's LNBF and the customer's receiver are connected to each other by a special configuration of conductors that are located within a cable.
The cabling used for Dish Networks home satellite system is different from most of the other wires and cables that are used in a home. Single wires of copper or aluminum are adequate for conducting electricity or for distributing signals at relatively low frequencies. However, when high-frequency bandwidths, such as EchoStar's 950 to 1450 MHz and 1650 to 2150 MHz bandwidths, are used, RG-6 coaxial cable *must* be used to prevent loss or degradation of the received signal. The 950 to 1450 MHz bandwidth is used in EchoStar's original "Legacy" receivers. The 950 to 1450 MHz and 1650 to 2150 MHz bandwidths are used in Dish Network's new DishPro & Dish Pro Plus systems.



When routing cable, certain techniques must be followed to reduce signal loss:
• **Do not bend the cable.** When changing the direction of the cable, the cable must be gradually looped with a minimum 4-inch radius.
• **Minimize the length of the cable and the number of F-connectors used in the installation.** The cable length between the antenna and its distribution point is very important for signal quality.
• **Do not kink, smash or damage the cable.** Damaged cable will degrade the signal.
• **If a portion of cable in the box or on the reel is damaged, do not use it.** Inspect the cable while pulling it off the reel or spool. Look for bends, kinks, squishes or anything that appears to be faulty.
• **Remove cable from the box or spool carefully.** Coaxial cable is not like a garden hose. Do not bend or twist it. Stand in front of the reel or spool and pull it directly off the reel or spool. Do not stand to the side and pull the cable.

Messenger Cable
A special type cable that combines the coaxial cable with the grounding wire – all in one cable – is available from Intertech warehouses. This cable – messenger cable – will be discussed later in this module. Grounding with messenger cable – a one-wire grounding system.

RG-6 "must" be used in all Dishnetwork installations. It is the *only* cable approved by EchoStar for use between the dish and the receiver.

Terminating Cable F-connectors

***1.* Use the correct hand tool for cutting cable to the correct length, cutting squarely across the cable.**
2. Use the cable preparation ("cable prep") tool to

remove the cable's outer sheathing.
3. Use fingernails to scrape the dielectric off of the core wire.
4. Examine the base of the center conductor for nicks caused by the cable prep tool.
5. Fold back the protective braid, exposing the center conductor.
6. Carefully slide the coax into the connector until dielectric becomes perfectly flush with the base. (This step is sometimes referred to as "filling the cup with milk." This description is a reminder that it is extremely important to not leave a gap in the cable.)
6. Place the F-connector into the crimping tool and squeeze until the Fconnector is tightened snugly to the cable.
7. Clip excessive core copper conductor wire to be within 1/16-inch of the end of the F-connector.
9. When terminating F-connectors, tighten ALL outdoor connections with a wrench.

Routing on the Home Exterior

Routing of the cable is a consideration when selecting the location for mounting the dish. If possible, the dish should be located as close as possible to the entry point(s) of the residence.
When identifying point(s) of entry, keep in mind that each entry:

• Must be as close as possible to the receiver(s), keeping in mind that the receivers may be located on an inside wall.

• Must avoid gas lines, electrical wires, and other dangers.

• Must avoid heating ducts, water lines and other undesirable obstacles.

When designing a cable run, utilize Dishnetwork standards to design appropriate external routing from the dish(es) to the point(s) of entry:
Determine the shortest route possible between the dish and the entry point(s). Again, review the point of entry for hazards.

• Design the routing so that the run is parallel to the house so that as little cable shows as possible.

Examples of preferred locations include hiding cable under the gutter or eaves or under the bottom of acceptable surfaces of siding.

Service loops allow trouble call or service call work on connectors to be completed without replacing an entire cable run. (The service loop provides excess cable that can be used to replace a connection.) Each service loop must be at least 4 inches in radius so the coaxial cable does not become crimped and damaged. Typically three screw-in clips are used to hold the loop in place. The screw-in clips are equally spaced around the loop.

Drip Loops
Drip loops are similar to service loops. However, the difference is that the drip loop provides protection from rain and other moisture. Drip loops are made at the ground block, at the point of entry, and at component locations – when any of these locations are exposed to potential moisture.

Mounting Series: Mounting Priority Chart

DNS ATM Training

Technician
01/23/12

Overview

The mounting series will provide the necessary preparation to incorporate knowledge of basic home construction and mounting to make the best mounting decision. The next video in the series will help technicians understand the steps to take that will help them determine the best mounting solution, based on the mounting priority chart.

What Changed

The standards for mounting have not changed. However, mounting continues to be one of the most common fail points for the standard installation. Out of all QA inspections, over 20% have mounting failures. Mounting is also responsible for 20% of all Trouble Calls. This series is intended to address these issues.

Why It's Important

Choosing the best mount location can be a challenging task for any technician. Where you mount and which mount you choose impacts your productivity, your TCs and ultimately your CSAT scores. Choosing the optimal mount location truly sets the tone of the install.

Using this three-step process will help you find the optimal place to mount the dish:

1. Find a grounding location
2. Check for line of sight
3. Choose the mount from the priority chart

Sometimes there is only one mount location that will work due to line of sight. But most times, there are several possible mount locations. These three simple steps will help you identify the best location in the least amount of time, even if there is only one location available.

What I Need To Do

Fig. 1 - Check for line of sight at the grounding location first.

The first step is to find an approved grounding location. The reason why we want to do this first is that generally there will only be one location to which you can ground. If you look for line of sight first, you may miss a location that is closer to the ground. The closer line of sight is to the ground location, the shorter the messenger cable run will be. This will make the installation easier and save time.

Once a ground location is identified, step two checks for line of sight at or near that grounding location, using the inclinometer ***(Fig. 1).*** Make sure there is an unobstructed view to the satellites, keeping in mind the growth of any foliage.

Mounting Priority Chart

In step three, select the best type of mount to use. Look at the mounting priority chart; select the highest ranked mount type possible.

The mounting priority chart is ordered based on several factors, including the time the mount takes to install, how difficult the mount is to install correctly, TC-12 rates, and the cost of the mount. As a result, the mounting priority chart will help speed up the installation and reduce TC-12 %.

The best mount choice is always the direct to wall mount. The direct to wall mount is easy to install and has a lower likelihood of installation errors. This mount should be placed 6 to 9 feet high to ensure it is out of the way, yet still accessible for the customer and future technicians.

If the direct to wall mount cannot by used—for example if no clear line of sight on the wall near the ground source—move on move on to the next mounting option: The direct to overhang mount.

The direct to overhang mount is another easy-to-install mount, and has a low TC rate when installed properly.

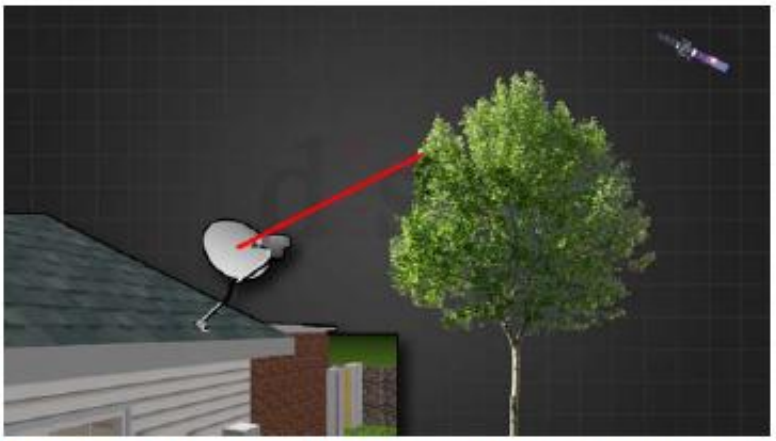


Fig. 2 - The direct to overhang LOS is obstructed; move to the next option on the chart.

If this isn't an option because there isn't clear line of sight from the overhang ***(Fig. 2)***, or if the customer has a tin roof, move on to the next mount on the list: The fascia/gable mount.

Continue moving down the priority chart until you find a mount that works. As you move down the priority chart, look at possible locations where line of sight may be slightly further away from the ground, but allow use of one of the mounts higher on the list.

After the fascia/gable mount, comes the angled fascia mount, and then under-eave mount. If none of these are an option, the direct to brick mount is the next choice ***(Fig. 3)***.

Fig. 3 – It's a quick process to identify that the direct to brick mount is the best option, even though it's sixth on the chart.

In Chicago, Boston, New York, Philadelphia, or any other location that has a lot of brick buildings, it's easy to think that the direct to brick mount is the option. This doesn't mean the priority list slows the process down. If you arrive at a brick building and find the ground location, it will be quickly apparent that you can't use the regular direct to wall mount. If there is a flat roof, we won't be able to use the direct to overhang, fascia, angled fascia, or under-eave mount. So that leaves us with our next option—the direct to brick mount. It's that quick.

Mounting Priority Chart

If the direct to brick mount isn't an option, a telescoping mount or soffit mount would be the next options.

If none of these eight mounting options work, consider a non-penetrating mount. If you're an MDU and the landlord only allows non-penetrating mounts, jump down to step 9—the railing mount. The next three options after the rail mount are:

- Non-pen mount—also known as the Universal Mount
- Versatile Mount—if the customer has a concrete tile roof
- Patio mount

If ALL of these twelve mounts are not an option, finally consider a pole mount.

Contrary to some people's belief, the pole mount is actually the highest TC-12 mounting option. The reason for this is that many people do not give the concrete enough time to set before placing the assembled dish on the pole. Pole mounts are also the most expensive mounting option we have. For every pole mount we install, we not only inconvenience the customer a second time but we also have to roll a truck a second time. This all adds up.

The final option that should be considered is the direct to roof mount. This option should only be used as the LAST option when there is no mount possible except on the roof.

If this is the case, manager approval is required and must be noted in the account notes. Additionally, fall protection MUST be worn. Direct to roof mounts carry high risk if not done correctly. Not only a safety risk, but an increased risk of damage to the customer's home as well.

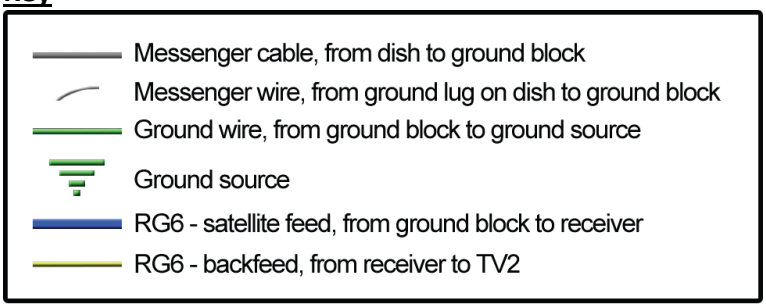
This mounting option should only be used if the job would otherwise be cancelled. This should NEVER be used due to customer preference when other options are available. If you encounter this situation, have your manager speak with the customer.

When determining which mount can be used from priority chart:

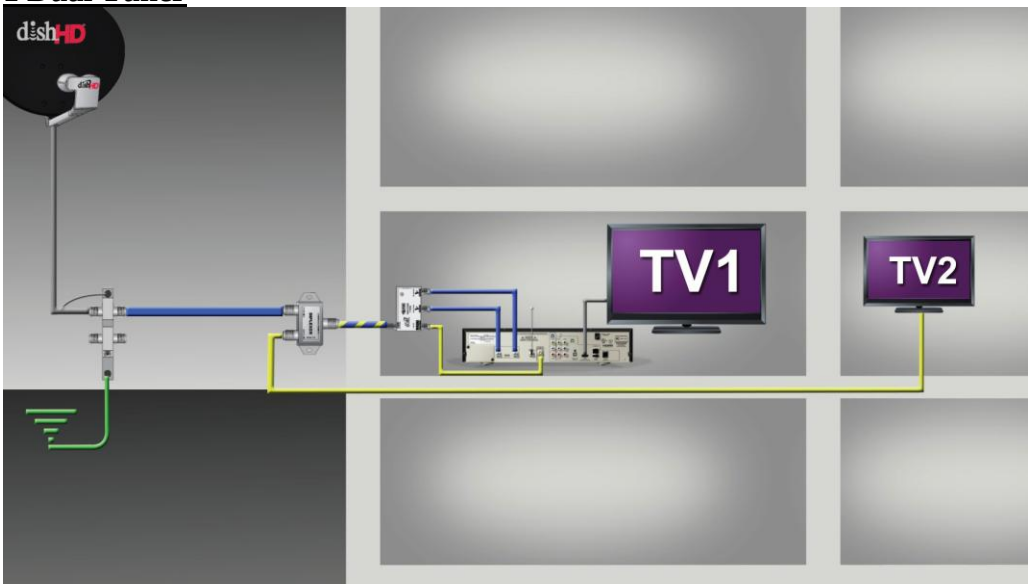
- Check to ensure the surface is solid, structurally sound, and in good condition
- Verify you are able to identify the stud or rafter when applicable
- Ensure compliance with all safety guidelines
- Double check line of sight from the exact mount spot
- Consider aesthetics, cable route, and penetration points

Mounting Priority Chart		
1	Direct to Wall	Penetrating
2	Direct to Overhang	Penetrating
3	Fascia/Gable	Penetrating
4	Angled Fascia	Penetrating
5	Under Eave	Penetrating
6	Direct to Brick	Penetrating
7	Telescoping Wall	Penetrating
8	Soffit	Penetrating
9	Rail	Non-Penetrating
10	Non-Pen	Non-Penetrating
11	VERSATILE™	Non-Penetrating
12	Patio	Non-Penetrating
13	Pole	Non-Penetrating
14	Direct to Roof	Penetrating

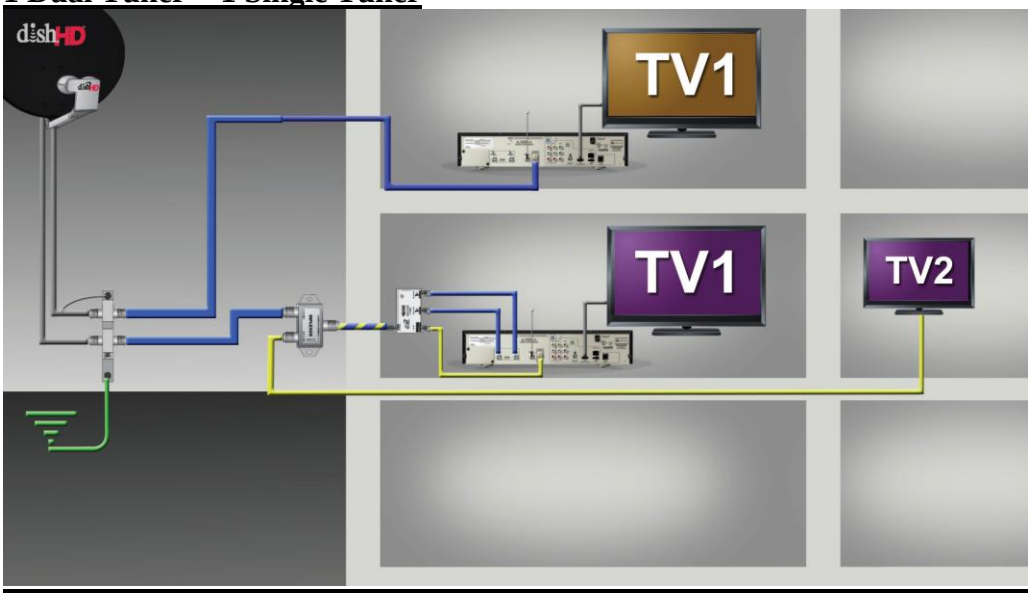
Key


Messenger cable, from dish to ground block
Messenger wire, from ground lug on dish to ground block
Ground wire, from ground block to ground source
Ground source
RG6 - satellite feed, from ground block to receiver
RG6 - backfeed, from receiver to TV2

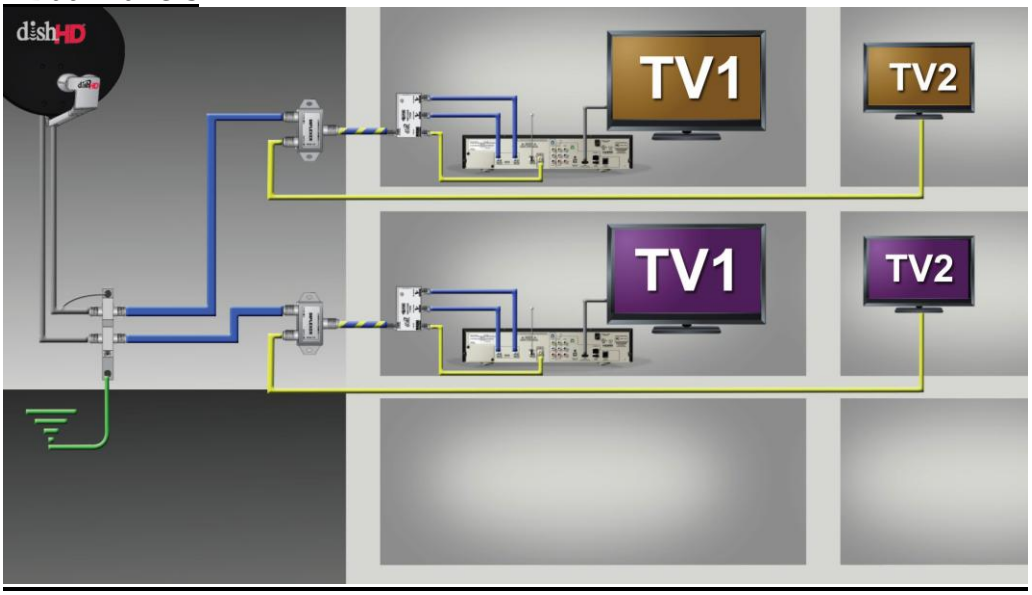
1 Dual Tuner



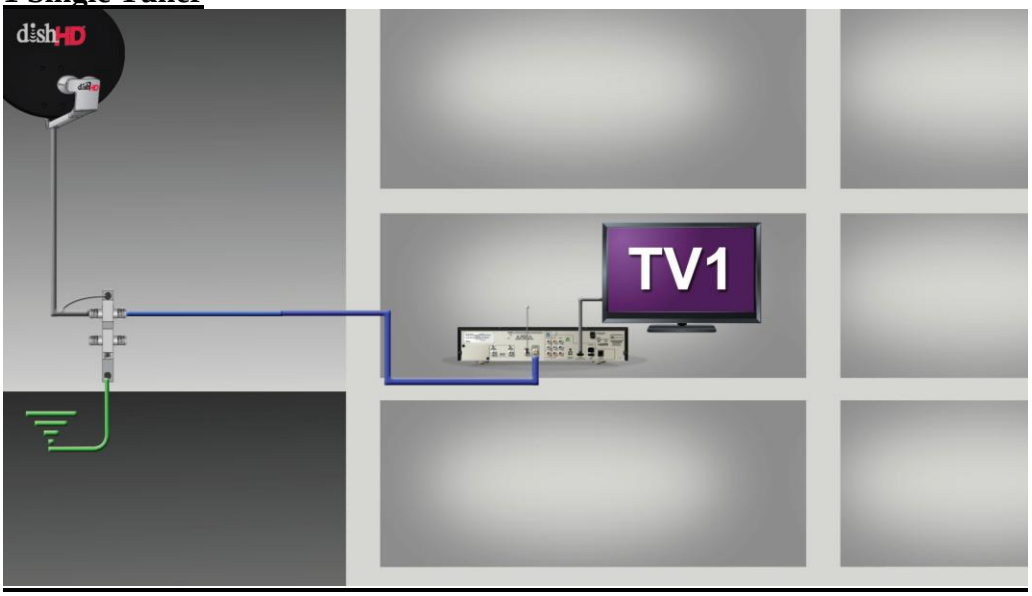
1 Dual Tuner + 1 Single Tuner



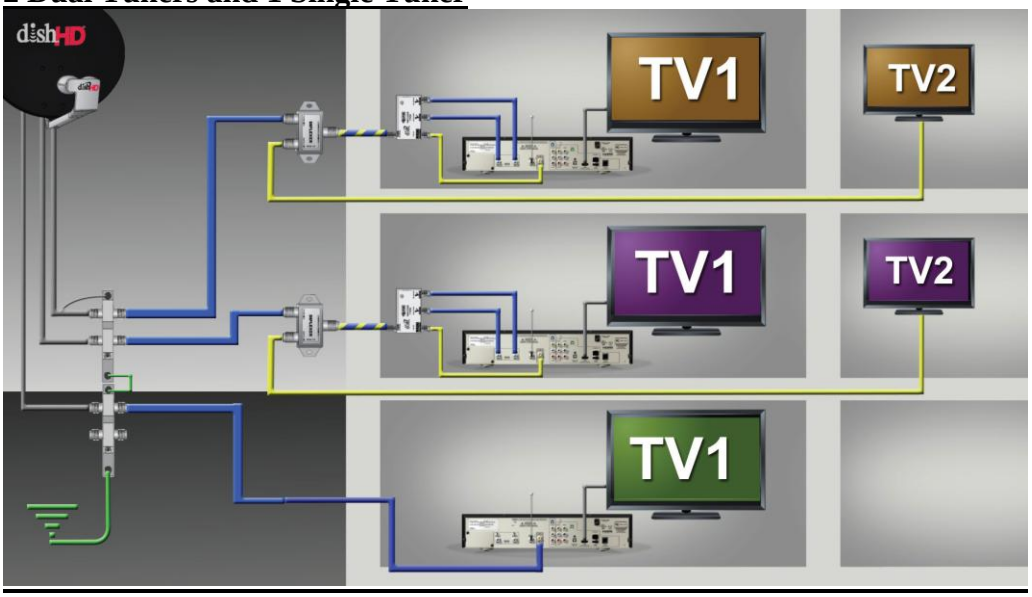
2 Dual Tuners



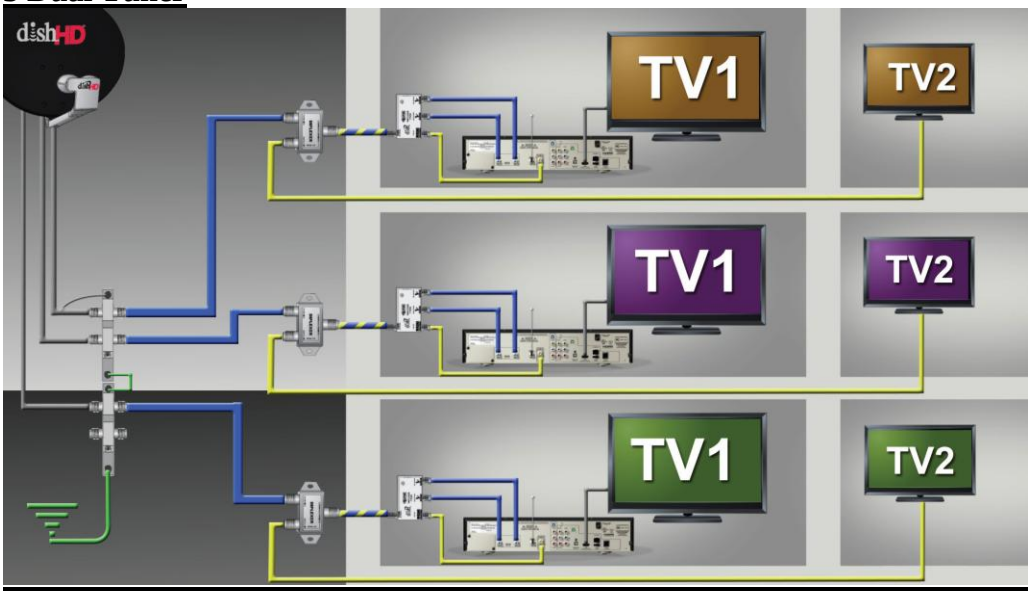
1 Single Tuner



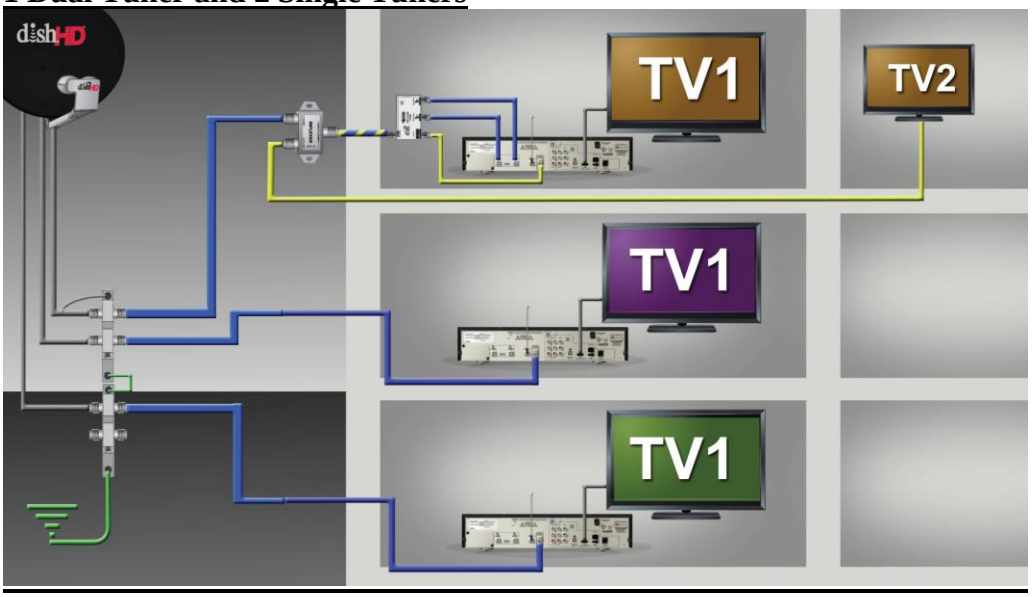
2 Dual Tuners and 1 Single Tuner



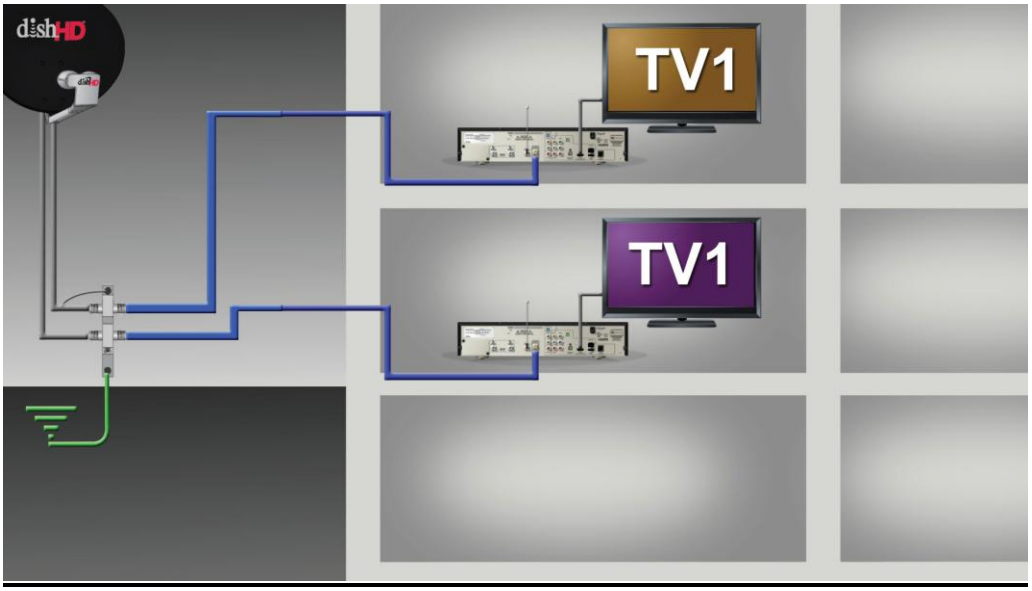
3 Dual Tuner



1 Dual Tuner and 2 Single Tuners



2 Single Tuners



Receivers

Receiver Model Families

Model Families	Models	Description	TVs	DVR	TV1 HD
Hopper with Sling	Hopper with Sling	Whole-Home HD DVR	1	x	x
Hopper	Hopper	Whole-Home HD DVR	1	x	x
Joey	Joey	Whole-Home HD DVR	1	x	x
922	ViP922 SlingLoaded DVR	SlingLoaded DVR	1	x	x
622	ViP622, ViP722, ViP722k	HD Duo DVR	2	x	x
522	DISH Player-DVR 522, DISH Player-DVR 625	Duo DVR	2	x	-
222	ViP222, ViP222k	HD Duo	2	-	x
322	DISH 322	Duo	2	-	-
612	ViP612	HD Solo DVR	1	x	x
512	DISH DVR 512	Solo DVR	1	x	-
211	ViP211, ViP211k, DISH 411	HD Solo	1	-	x
311	DISH 311, DISH 381	Solo	1	-	-

Legacy Receivers

Receiver	HD/SD	Tuners	TVs	DVR	Recording Time	Remote Type
1000/1500	SD	Single	1	-	-	IR
2700/2800	SD	Single	1	-	-	IR
3000/3500/3700/3900	SD	Single	1	-	-	IR
4000	SD	Single	1	-	-	IR or UHF
4700/4900	SD	Single	1	-	-	IR
5000	SD	Single	1	-	-	IR or UHF
6000	SD/HD	Single	1	-	-	IR or UHF
7100/7200	SD	Single	1	-	-	IR
JVC IRR	SD	Single	1	-	-	IR or UHF
DISH 111	SD	Single	1	-	-	IR
DISH 301	SD	Single	1	-	-	IR
DISH 501	SD	Single	1	x	Up to 35 hours	IR or UHF
DISH 508/510	SD	Single	1	x	Up to 60 hours	IR or UHF
DISH Player-DVR 921	SD/HD	Dual	1	x	Up to 180 hours SD Up to 25 hours HD	IR or UHF Pro
DISH Player-DVR 942	SD/HD	Dual	2	x	Up to 180 hours SD Up to 25 hours HD	

YOUR HOPPER

USING YOUR HOPPER WHOLE-HOME DVR

Learn how to master all of your Hopper's basic and advanced features.

Basic

- PrimeTime Anytime
  - Enabling PrimeTime Anytime
  - Disabling PrimeTime Anytime
  - Accessing PrimeTime Anytime
- Collapsible Channels in the TV Guide
  - Expanding Collapsible Channels
  - Collapsing Already Expanded Channels
- TV Viewing Status Screen
  - Accessing the TV Viewing Status Screen
  - Watching DVR Content
  - Watching On Demand Content
- Remote Locator

Advanced

- PrimeTime Anytime
  - Setting Up PrimeTime Anytime
  - Saving a PrimeTime Anytime Recording to your DVR - Individual Recording
  - Saving a PrimeTime Anytime Recording to your DVR - Series
- Multi-Channel Recall
  - Disabling Multi-Channel Recall
- TV Viewing Status Screen
  - Joining a Live Program in Progress
  - Joining a Recording in Progress
  - Joining a PrimeTime Anytime Recording in Progress
- Watching a Program in One Room and Finishing it in Another
  - Finishing Live TV
  - Finishing a Recorded Program from Your DVR

PrimeTime Anytime

Recording with PrimeTime Anytime is an optional feature that only uses one tuner to record ABC, CBS, FOX and NBC.

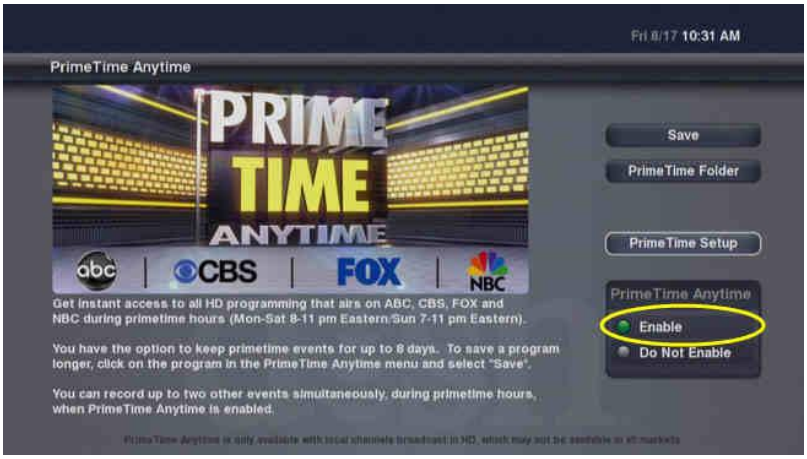
	Mon-Sat	Sun
Eastern, Pacific	8-11pm	7-11pm
Central, Mountain	7-10pm	6-10pm

Enabling PrimeTime Anytime

1. Press MENU on your remote

2. Select the PrimeTime Anytime icon

3. Select Enable and then save your selection

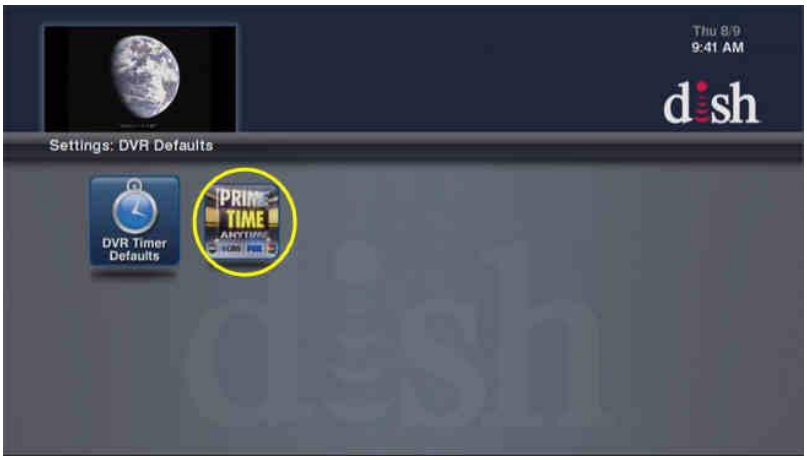

Fri 8/17 10:31 AM
PrimeTime Anytime
PRIME TIME ANYTIME
abc
CBS
FOX
NBC
Get instant access to all HD programming that airs on ABC, CBS, FOX and NBC during primetime hours (Mon-Sat 8-11 pm Eastern/Sun 7-11 pm Eastern).
You have the option to keep primetime events for up to 8 days. To save a program longer, click on the program in the PrimeTime Anytime menu and select "Save".
You can record up to two other events simultaneously, during primetime hours, when PrimeTime Anytime is enabled.
Save
PrimeTime Folder
PrimeTime Setup
PrimeTime Anytime
Enable
Do Not Enable

Disabling PrimeTime Anytime

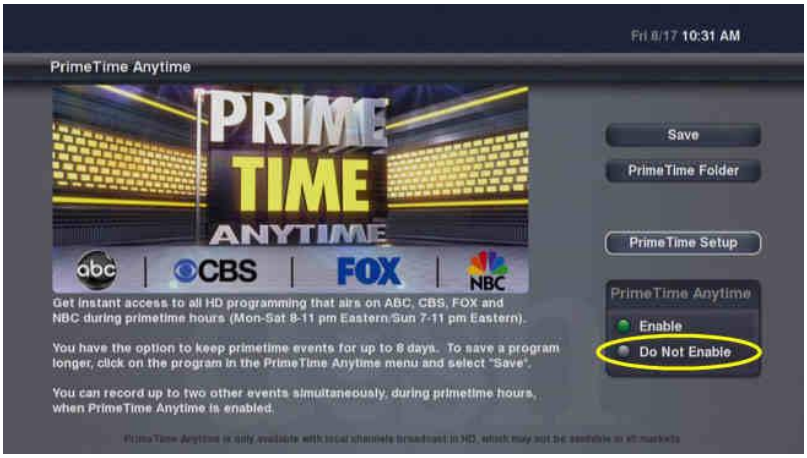
1. Select Settings

2. Select DVR Defaults

3. Select PrimeTime Anytime



4. Select Do Not Enable and then save your selection

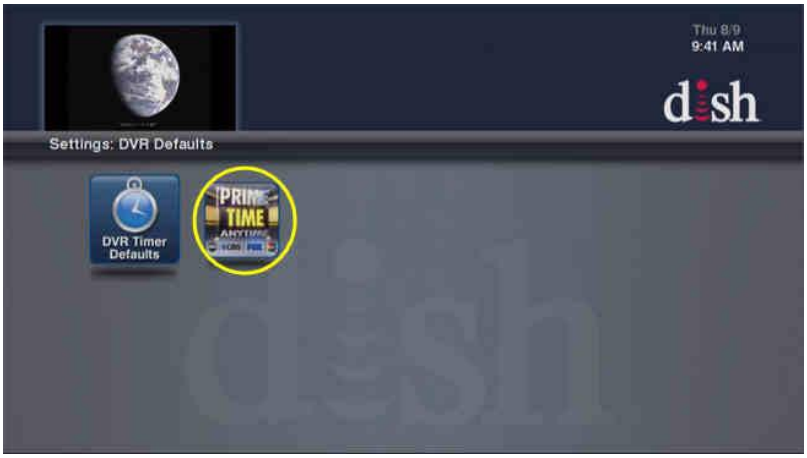

Fri 8/17 10:31 AM
PrimeTime Anytime
PRIME TIME ANYTIME
abc
CBS
FOX
NBC
Get instant access to all HD programming that airs on ABC, CBS, FOX and NBC during primetime hours (Mon-Sat 8-11 pm Eastern/Sun 7-11 pm Eastern).
You have the option to keep primetime events for up to 8 days. To save a program longer, click on the program in the PrimeTime Anytime menu and select "Save".
You can record up to two other events simultaneously, during primetime hours, when PrimeTime Anytime is enabled.
Save
PrimeTime Folder
PrimeTime Setup
PrimeTime Anytime
Enable
Do Not Enable

Setting Up PrimeTime Anytime

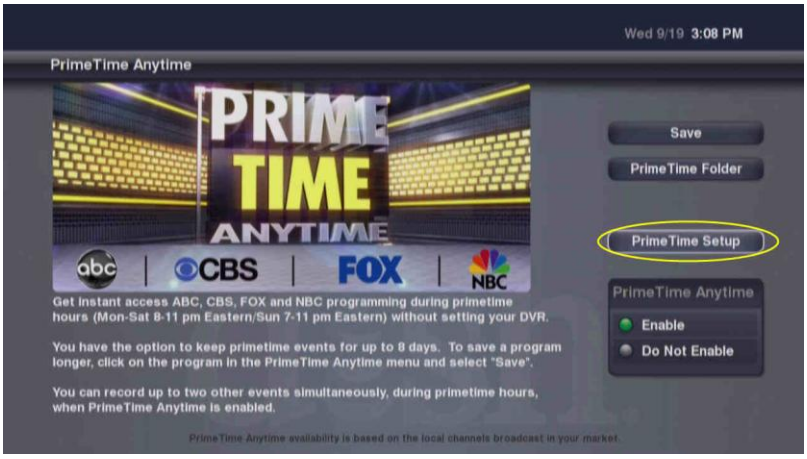
1. Select Settings

2. Select DVR Defaults

3. Select PrimeTime Anytime



4. Select PrimeTime Setup


Wed 9/19 3:08 PM
PrimeTime Anytime
PRIME TIME ANYTIME
abc CBS FOX NBC
Get instant access ABC, CBS, FOX and NBC programming during primetime hours (Mon-Sat 8-11 pm Eastern/Sun 7-11 pm Eastern) without setting your DVR.
You have the option to keep primetime events for up to 8 days. To save a program longer, click on the program in the PrimeTime Anytime menu and select "Save".
You can record up to two other events simultaneously, during primetime hours, when PrimeTime Anytime is enabled.
PrimeTime Anytime availability is based on the local channels broadcast in your market.
Save
PrimeTime Folder
PrimeTime Setup
PrimeTime Anytime
Enable
Do Not Enable

5. Select the channels and days of the week that you would like to include in PrimeTime Anytime or increase/decrease the number of days to keep your PrimeTime Anytime events. Select Done to save your settings

*Note: Removing one or more channels will not free up additional tuners.

Accessing PrimeTime Anytime

PrimeTime Anytime recordings can be accessed three ways:

1. Press the DVR button on your remote and Select the PrimeTime Anytime icon on the My Recordings page
2. Press the GUIDE button on your remote and select a channel being recorded by PrimeTime Anytime. (Only if PrimeTime Anytime is currently recording)
3. Press the red button in the middle of your remote to bring up the TV Viewing Status screen and then select the PrimeTime Anytime icon

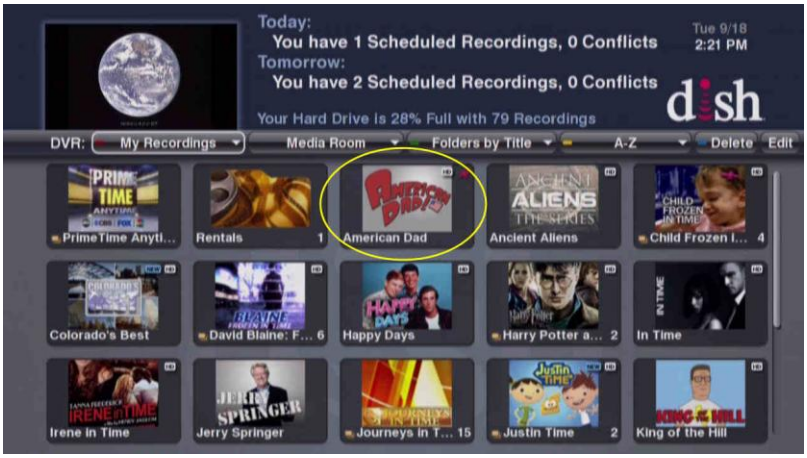
Saving a PrimeTime Anytime Recording to your DVR - Individual Recording

PrimeTime Anytime recordings are saved for 8 days. If you would like to permanently save a PrimeTime Anytime recording, you need to save the recording to your DVR.

1. Select the recording you would like to save and then select Save

2. The recording will have an S icon in the upper right indicating you successfully saved the recording

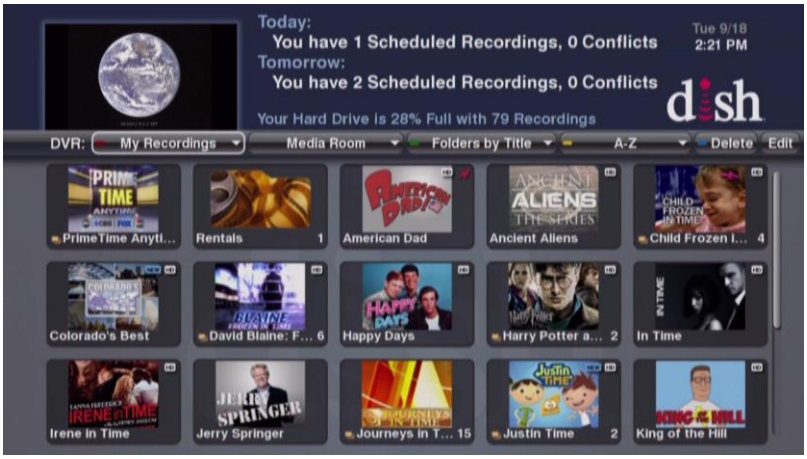
3. Go to the My Recordings folder in your DVR to view your saved recordings



Saving a PrimeTime Anytime Recording to your DVR - Series

1. Select the series you would like to save and then select Save Series

2. Episodes will be automatically saved to the My Recordings folder in your DVR every week



Multi-Channel Recall

You have the ability to recall any of the last four channels you watched using the RECALL button on your remote.

1. Press RECALL on your remote

2. The last four channels you were watching will appear. Highlight and select the channel you would like to return to

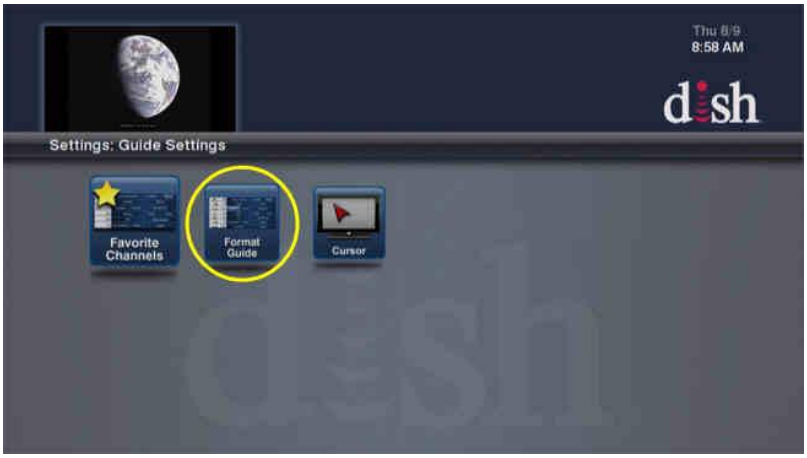
Disabling Multi-Channel Recall

1. Press MENU on your remote

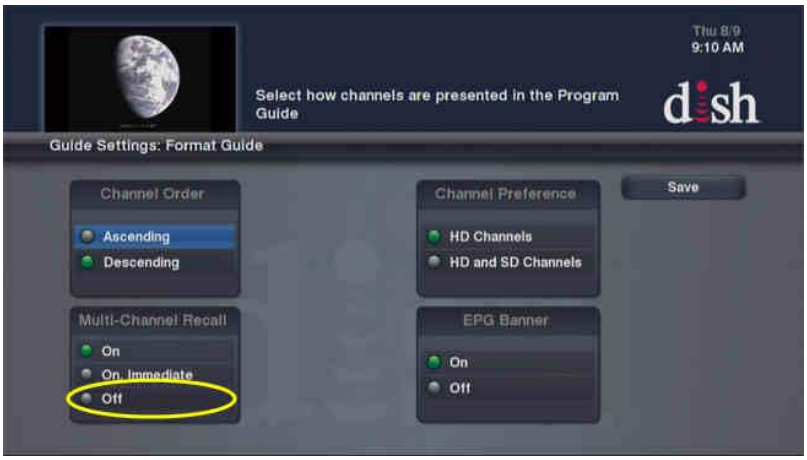
2. Select Settings

3. Select Guide Settings

4. Select Format Guide



5. Select Off in the Multi-Channel Recall section and then save your selection



Collapsible Channels in the TV Guide

The Hopper TV Guide uses collapsible channel ranges to group similar channels together all on one channel. When navigating through the TV Guide, a collapsible channel range is designated with a plus sign icon.

Expanding Collapsible Channels

Select a channel with a plus sign icon to reveal all of the channels contained in that collapsible channel range. Once expanded, you can navigate like you normally would in the TV Guide.

Collapsing Already Expanded Channels

There are two ways to collapse a channel range back to one channel:

1. There is a specific channel, designated with a minus sign icon, associated with the expanded channel range. Select this channel to collapse the channel range
2. While you are navigating through the expanded channels in the TV Guide, press the blue button in the middle of your remote to collapse the channels

TV Viewing Status Screen

The TV Viewing Status screen is your place to see how the system's tuners are being used.

Accessing the TV Viewing Status Screen

There are two ways to access this screen:

1. Press the red button in the middle of your remote when watching live TV or a recording
2. Turn on a receiver when all the Hopper’s tuners are already in use

If fewer than three tuners are being used, you can watch TV as you normally would by typing in a channel number or pressing GUIDE on your remote to access the TV Guide.

If all three tuners are being used, you can join something in progress

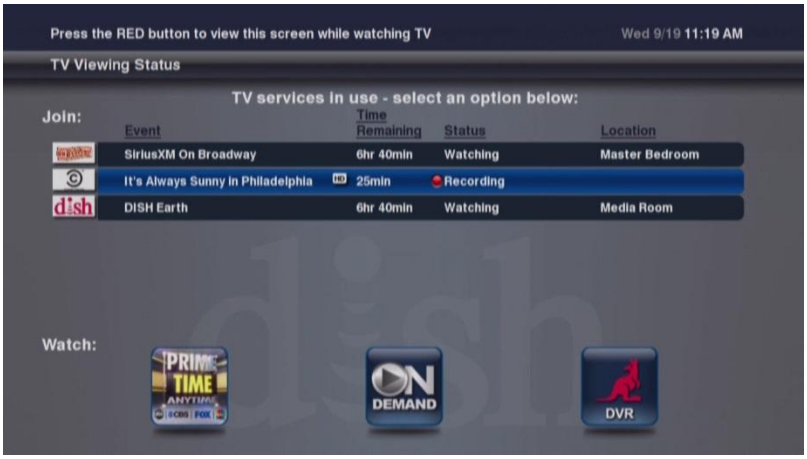
Joining a Live Program in Progress

1. Highlight the event you would like to join and press SELECT

2. The other user will receive a notification letting them know you are now watching with them

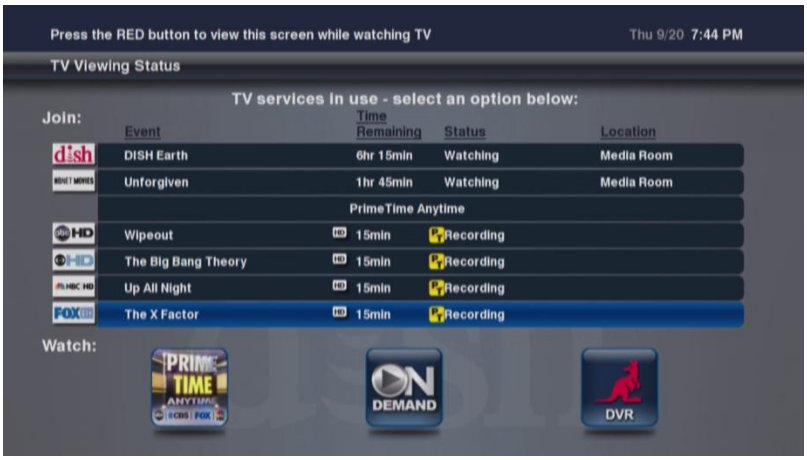
Joining a Recording in Progress

1. Highlight the event you would like to join and press SELECT



Joining a PrimeTime Anytime Recording in Progress

1. Highlight the event you would like to join and press SELECT



You always have the option to watch content from your DVR or On Demand, regardless of how many tuners are in use.

Watching DVR Content

1. Select the DVR icon or press the DVR button on your remote

Watching On Demand Content

1. Select the On Demand icon

Remote Locator

Finding your remote has never been easier with the Remote Locator feature offered with the Hopper and Joey receivers.

1. Press the Locate Remote button on the front of your receiver (the front panel will need to be opened on the Hopper)

2. The remote will start beeping and the top four buttons will light up

Watching a Program in One Room and Finishing it in Another

When you have multiple TVs linked to your Hopper, you have the ability to stop a program in one room and pick it up in another.

Finishing Live TV

1. Room A: Pause the program using your remote. Do not turn off the receiver

2. Room B: Bring up the TV Viewing Status screen by pressing the red button in the middle of your remote

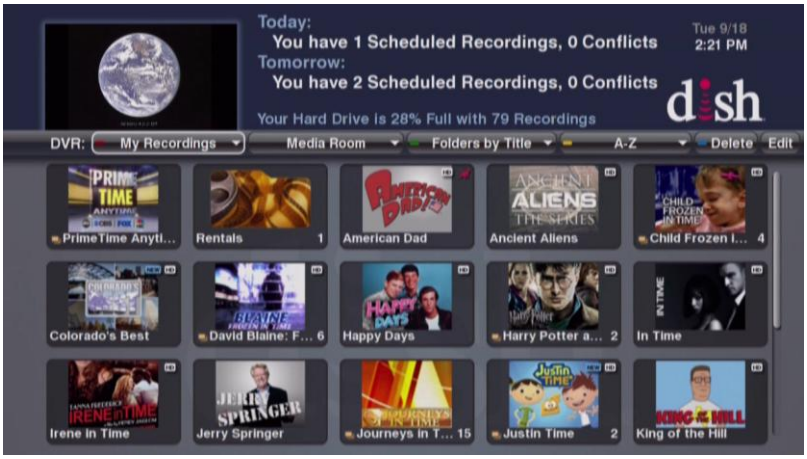
3. Highlight the event you just paused and press SELECT

4. The show will begin playing from where you paused

Finishing a Recorded Program from Your DVR

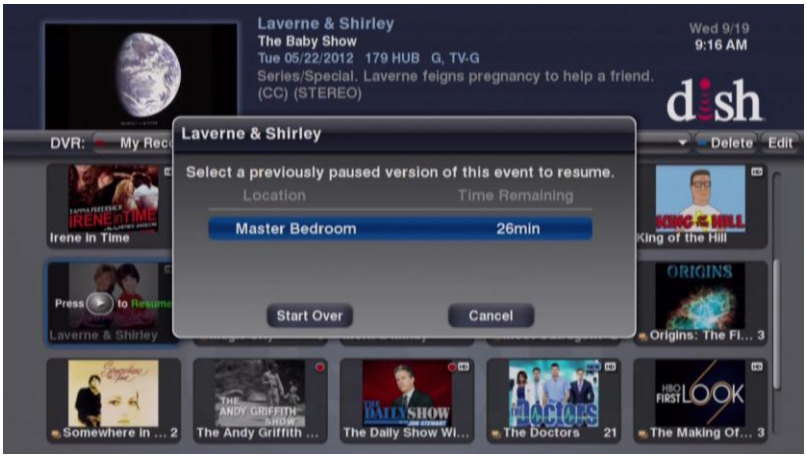
1. Room A: Turn off the receiver

2. Room B: Turn on the receiver and go to the My Recordings page in your DVR



3. Select the program you were just watching and then Resume

4. Highlight the bookmark that represents where you previously stopped watching and press SELECT



ViP®922 SlingLoaded™ DVR

Remote Viewing Requirements

PC Requirements	HD Streaming (on home network)	Intel 2.4 GHz Core 2 duo class processor with 2 GB of RAM, DXVA support desirable on graphics card
	SD/QVGA streaming (anywhere)	Pentium IV class
	Operating System	Microsoft XP, Vista, or Windows 7
Mac Requirements	HD Streaming (on home network)	Intel 2.8 GHz Core 2 duo class processor with 2 GB of RAM
	SD/QVGA Streaming (anywhere)	Intel 2.8 GHz Core 2 duo class processor with 2 GB of RAM
	Operating System	OS 10.5.7 or higher
Browser Specifications	Internet Explorer	Version 7 or higher
	Firefox	Version 3.0 or higher
	Safari	Version 4.0 or higher

32.0 Hot Keys

	Hot Keys			
	Red	Green	Yellow	Blue
Live TV	JUMP	Quick Clicks Feature	Settings	Broadband Setup
Main Menu	JUMP	On Demand	Settings	Broadband Setup
Settings' Menu	JUMP	System Info	Point Dish	Broadband Setup

Receiver Substitution Matrix

Overview

Model families are based on receiver features and capabilities. Receivers within the same model family can be substituted without a call to the CSC if the receiver on the work order is not available.

Requirements

- Use the same model receiver when possible
- If a receiver has no allowable substitution, the CSC must be called for return authorization (RA) or upgrade options
- Discontinued receivers have no allowable substitutions; if the receiver is not listed in the matrix below, the technician must call the CSC for upgrade options

Matrix

Receiver	Allowable Substitutions	Model Family	Model Family Description
Hopper with Sling	Hopper with Sling	Hopper with Sling	Whole-Home HD DVR
Hopper	Hopper	Hopper	Whole-Home HD DVR
Joey	Joey	Joey	Whole-Home HD DVR
211	211, 211k, 211z	211	HD Solo Receiver
211k	211, 211k, 211z	211	HD Solo Receiver
211z	211, 211k, 211z	211	HD Solo Receiver
222	222, 222k	222	HD Duo Receiver
222k	222, 222k	222	HD Duo Receiver
301	311, 311k	311	Solo Receiver
311	311, 311k	311	Solo Receiver
311k	311, 311k	311	Solo Receiver
322	322	322	Duo Receiver
381	311, 311k	311	Solo Receiver
411	211, 211k, 411	211	HD Solo Receiver
510	512	512	Solo DVR Receiver
512	512	512	Solo DVR Receiver
522	522, 625	522	Duo DVR Receiver
612	612	612	HD Solo DVR Receiver
622	622, 722, 722k	622	HD Duo DVR Receiver

622HZ	722, 722k	622	HD Duo DVR Receiver
625	625	522	Duo DVR Receiver
722	722, 722k	622	HD Duo DVR Receiver
722k	722, 722k	622	HD Duo DVR Receiver
922	922	922	SlingLoaded DVR

Last Modified: Wednesday, March 20, 2013

Receivers and Remotes

Limited Mode

Power Scan Limited Mode

1. Hold TV Mode button until all mode lights flash
2. Enter 5001# using number pad
3. Perform powerscan as normal

Easy Limited Mode

1. Ensure remote is programmed to TV
2. Press and hold TV Mode button until all Mode lights flash
3. Press Page Up once then #

Standard Limited Mode

1. Identify Remote Code
2. Enter TV Code and add a 1 to the end (7-4-2-1)

Retrieve Remote Code

1. Hold Mode button until all lights flash
2. Press # # (Pound Twice)
3. Count blinking lights on selected mode button

Note: Fast Blink = 0 Slow Blink = 1

Aux Volume Control

4. Hold Aux Mode button until all mode Lights flash
5. Press #
6. Press Volume up
7. Press 0
8. Press #

TY Volume Control

1. Hold TV Mode button until all mode Lights flash
2. Press #
3. Press Volume up
4. Press 0
5. Press #

Enable Sat Auto-Tune Feature

1. Program remote to TV
2. Program Recover Button
3. Press and Hold Sat button until all mode lights Flash
4. Press * - Volume Up - #

Disable Sat Auto-Tune Feature

1. Press and Hold Sat button until all mode lights Flash
2. Press * - Volume Up - #

Set Recover Button

1. Hold down TV button until all Mode lights flash
2. Press * - then the 3-digit channel number - # (*-0-6-0-#)

Programming the Aux Button

1. Retrieve code from User's Manual
2. Hold Aux Mode button until all mode lights flash
3. Press 0 for a second TV, 1 for a second VCR, 2 for a tuner or amplifier
4. Enter device code from manual
5. Press #

Extend Remote Address (17-31)

Open the system info screen on the receiver

6. Press and hold SAT button until all mode buttons flash
7. Press # then press the channel up arrow key
8. Input a number between 1 & 15 (the remote automatically adds 16 to the result), Example: 1 = 17, 2 = 18, 3 = 19, 4 = 20, etc.
9. Press # then press the RECORD key

Using the Learning Remote

1. Place Dish Network remote and original equipment remote on a Flat Stable Surface
2. Press and hold the Mode button for the device you are teaching until all Mode lights Flash
3. To start learning commands for this remote
   - If a code is programmed into the remote press and release RECALL then hold RECORD for three seconds
   - If you have not programmed a code for that device, press and hold RECORD for three seconds
4. Point the front of the original device remote to the small square on the front, left-hand side of the Dish Network remote
5. On the Dish Network remote control press the button you want to teach
6. On the original device remote control, press and hold the button you want learned
   - If the Dish Network remote learns the command, the mode light blinks off and then back on
   - If the mode light blinks three times or remains lit, the Dish Network remote did not learn the command
7. Repeat steps 5 & 6 until all commands have been learned
8. To end the learning sequence
   - Press one of the mode buttons, this saves all of the commands
   - To cancel learning process, do not press any buttons for 30 seconds, this will cause the remote to time out

Retrieve Remote Code

1. Hold mode button until all lights flash
2. Press #-# (# twice)
   - Fast Blink = 0
   - Slow Blink = 1

Extending UHF and UHF Pro Remote Control Range

This section provides ways of extending UHF and UHF Pro remote control range to make remote controls work reliably in difficult installations, where attempts to improve remote control range have been unsuccessful using easier methods.

The solutions shown use additional approved parts to “back-feed” the remote control antenna onto the same cable as the HOME DISTRIBUTION (CH 21-69 or 73-125) Out or CH 3-4 Out for the distant TV location. This allows the remote control antenna to be placed in the room with the TV, extending the range of the UHF or UHF Pro remote control.

Installation Diagrams

The following installation diagrams are the approved configurations for extending the UHF and UHF Pro remote control range. Choose the diagram that best matches your installation and follow it closely.

Note: If an over-the-air antenna is installed, the remote control signal cannot be combined onto the same cable as the over-the-air signal.

Diagram 1:

Dual-tuner, two-TV receiver with remote control antenna combined with HOME DISTRIBUTION (Ch 21-69 or 73-125) output.

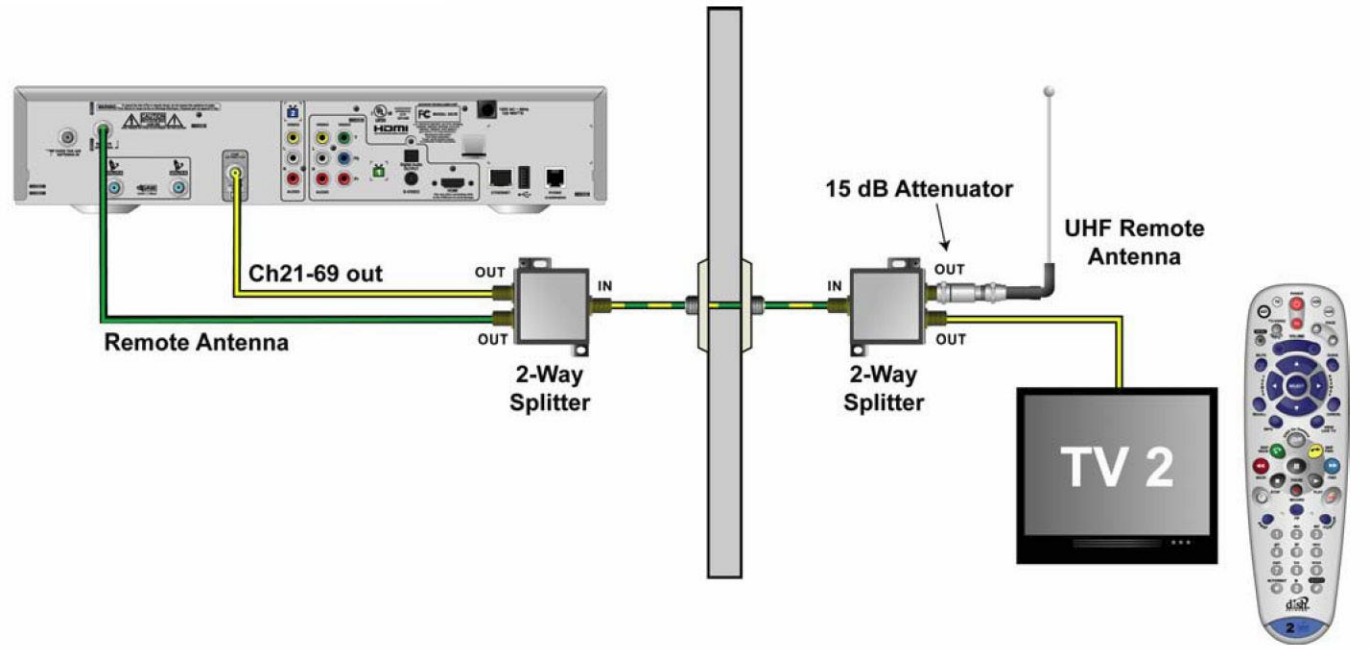


Diagram 2:

Single-TV receiver with UHF or UHF Pro Remote Control and remote control antenna combined with CH 3-4 output .

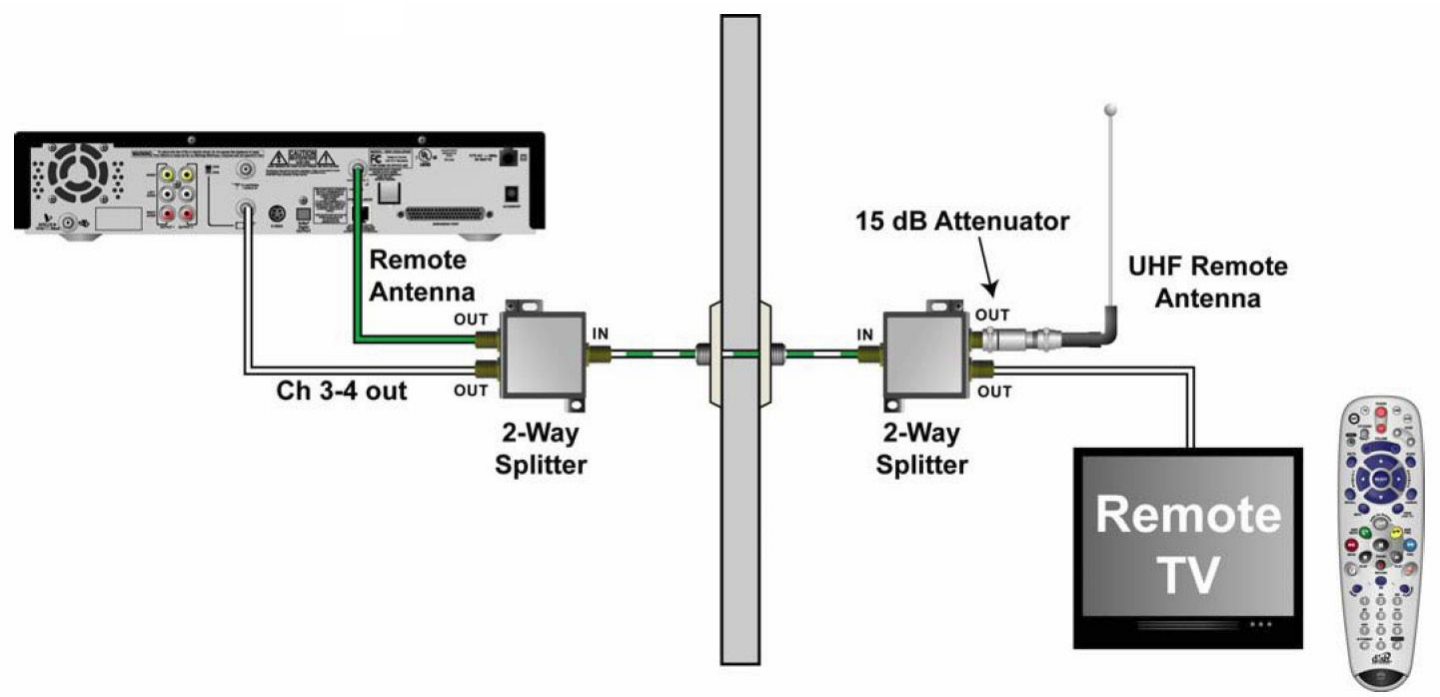


Diagram 3:

Dual-tuner, two-TV receiver with remote control antenna, HOME DISTRIBUTION (Ch 21-69 or 73-125) output, and Satellite In combined on a single cable.

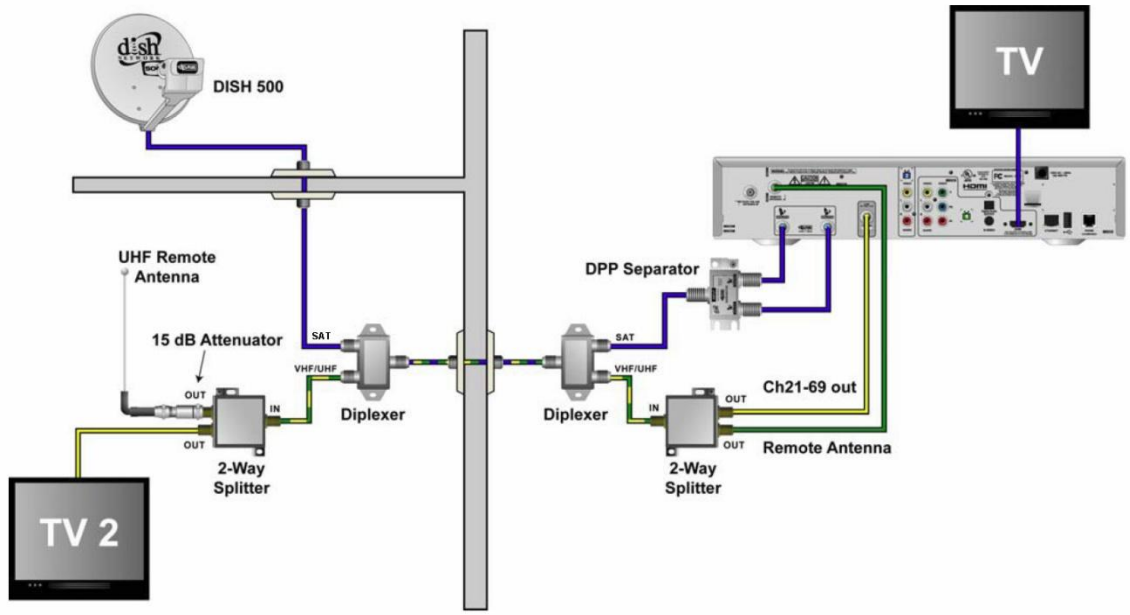
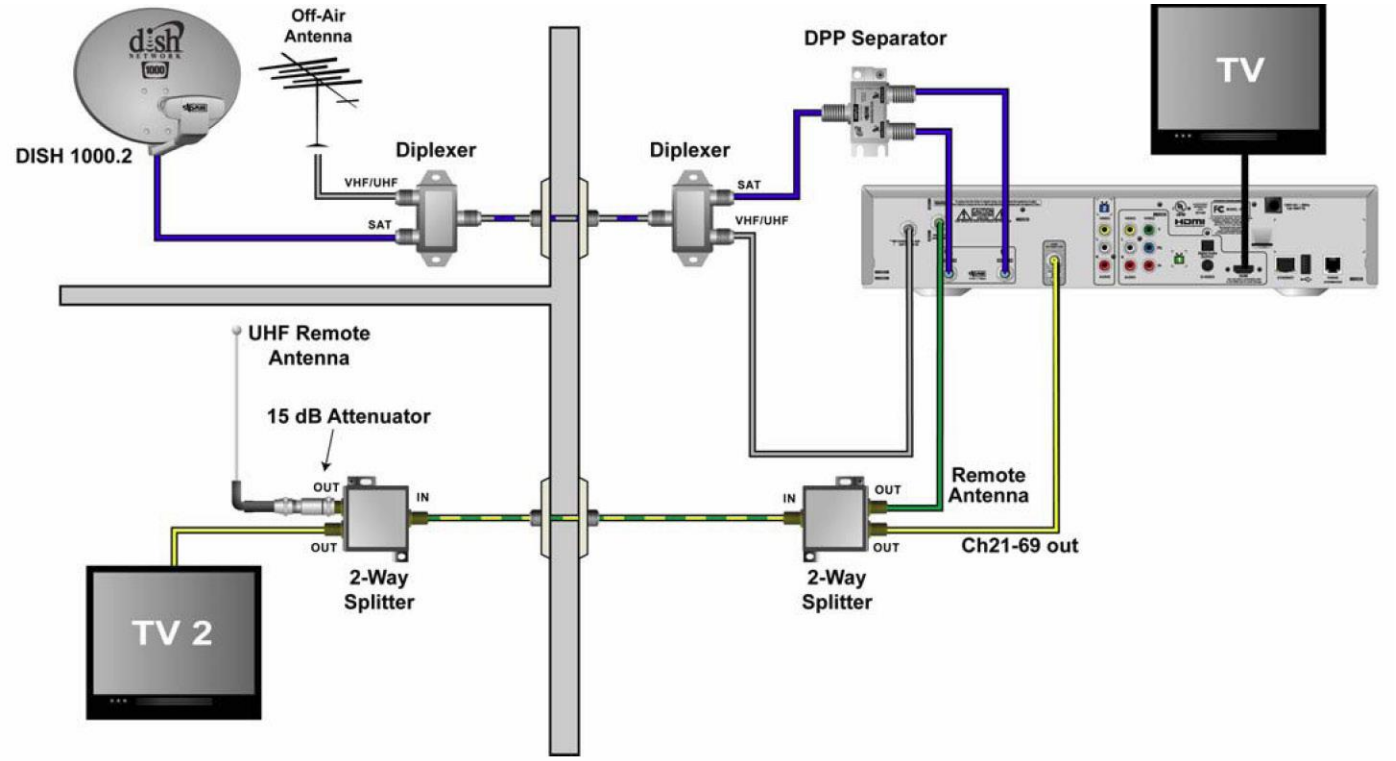


Diagram 4:

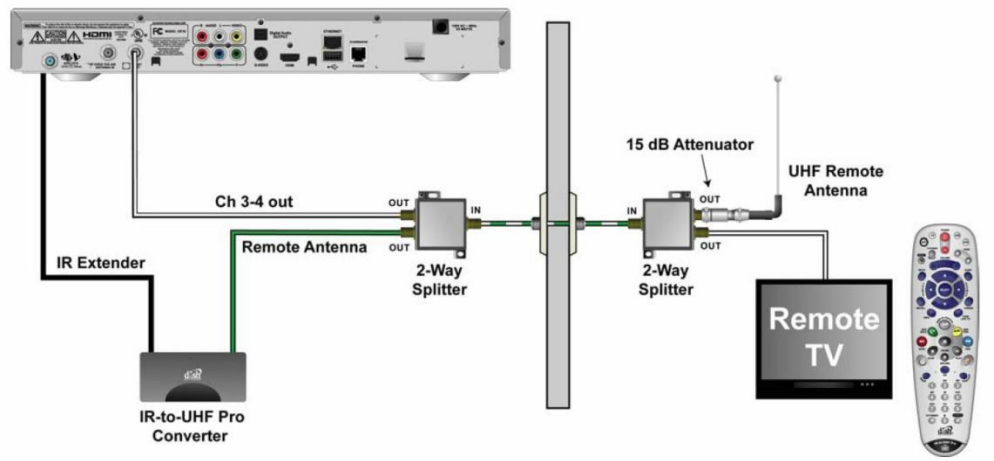
Dual-tuner, two-TV receiver with remote control antenna combined with HOME DISTRIBUTION (Ch 21-69 or 73-125) output. Over-the-Air antenna and Satellite In combined using diplexers on a separate cable.



Extending UHF and UHF Pro Remote Control Range

Diagram 5:

Single-TV receiver using IR-UHF Pro or IR-UHF Upgrade Kit and remote control antenna combined with CH 3-4 output



UHF Remote Interference

If an approved external device is connected to a DISH Network ViP receiver and you notice degradation in the response of the receiver to the UHF remote control, try the following steps, in the order presented, to correct the issue.

After performing each step, try using the remote again to see if operation has improved.

1. Placement and Cables

Placement:

- External devices should not be placed on top of the receiver, as close proximity can cause UHF remote interference. Move the external device away from the receiver and the UHF remote antenna connection points.
- Increase the separation between the receiver and the external device
- Place the device on a separate shelf from the receiver
- Place the Sling Adapter flat on the rubber feet off to the side of the receiver
- Do not position an accessory so that it will block the ventilation openings on the receiver

As a general rule, the further apart you can get the attached device and the UHF antenna the better.

USB Extension Cables:

Sling Adapter and External Hard Drive:

- USB extension cables can increase interference if used on a Sling Adapter or an external hard drive
- Do not use USB extension cable with these devices
    - Wi-Fi Adapter
- The USB extension cable can be used with the Wi-Fi Adapter
- One USB extension cable is included with the device

2. Change the frequency band for the UHF remote control to use UHF Pro Band B as follows:

On a 6.3 or 6.4 remote control:

- Remove the battery cover and slide the small switch inside the compartment to position B, changing the transmitted RF characteristics of the remote control
- Replace the battery cover and re-link the remote with the receiver using the System Information screen
- See the Remote Control User Guide for detailed instructions
- On a 21.0 remote:
- Select an even-numbered remote address (for example, address 2, 4, or 6) which sets this remote to Band B and re-link the remote with the receiver using the System Information screen
- See the Remote Control User Guide for detailed instructions
- Note: This step does not apply to ViP211 or ViP211k receivers. It applies to the ViP612 DVR receiver only if a UHF remote control is being used

3. UHF Remote Antenna
    - Move the UHF antenna away from the externally connected device and the receiver using a UHF remote-antenna extension cable
    - Use a coaxial jumper cable to relocate the antenna
    - RG-6 or RG-59 cable
    - This jumper should be four to six feet in length
    - Use a barrel connector to attach the UHF antenna to the jumper
    - You may need to try several locations for the UHF remote antenna to find the one that works best in your installation
    - Route the cable and place the antenna in such a way that it is aesthetically pleasing to the customer
    - Remember when relocating the UHF antenna to be careful not to damage the customer's furnishings
4. USB Port
    - If an external device is connected to the USB port on the receiver's rear panel, try plugging the device into the front-panel USB port instead
    - Make sure the IR sensor on the front of the receiver is not blocked
5. Customer Education
    - Educate the customer on the actions you have taken to improve their Remote Control's operation
    - Inform the customer that the interference could re-occur if they rearrange the devices
6. If none of these actions corrects the problem, refer to your manager.

Remote Key Overview

The available keys are shown and explained in the following chart. It's important to note that the 6.2/6.3/6.4 tabs are not interchangeable with 4.0/6.0 tabs. So in the instance where a customer receives a 6.4 tab to replace their 6.0 tab, they can not use the original tab on the new remote.

Receivers	211, 211k, 411, 222, 322, 522, 625 TV1	222, 222k, 622, 722, 722k, only TV1	322, 522, 625 only TV1	222, 522, 622, 625, 722, TV2	501, 508, 510	381, 612
Color	Green key with green 1	Green key with black 1 and UHF Pro icon	Green key with green 1 and UHF Pro icon	Blue key with black 2 and UHF Pro icon	Black key with UHF icon	Silver key with UHF Pro icon
SAT mode Sends Out:	IR	UHF Pro only	UHF Pro only	UHF Pro only	UHF & IR	UHF Pro only
SAT In AUX Mode Sends Out:	IR	UHF & IR	UHF & IR	UHF & IR	UHF & IR	UHF & IR

- The tabs can be broken down into the following:
- TV1 IR: Used for any IR configuration.
- TV1 UHF Pro: Used for TV1 of duo receivers when there is something preventing an IR remote from working correctly; this can include instances of IR interference or a customer having the receiver in a different room from the TV. There are two different TV1 UHF Pro tabs. Green '1' and UHF Pro Icon: This tab should be used for setting up TV1 UHF Pro on a 322, 522 or 625 only. This tab sends out the same signals as a TV2 tab, relying on the receiver's TV1 UHF PRO Setup to recognize it as a TV1 command.
- Black '1' and UHF Pro Icon: Used for setting up TV1 UHF on VIP Duo receivers. No menu setup is required.
- TV2 UHF Pro: Used to program a remote for TV2 on any Duo receiver.
- UHF Pro: Used for any uhf pro receiver. This should normally be used for UHF Pro solo receivers, but can also be used for duo receivers; this should be avoided so as to prevent confusion stemming from the lack of numbers on the tab.

- IR/UHF: Used for receivers that support UHF rather than UHF Pro. With this tab, the remote sends out both UHF and IR signals in satellite mode. This allows the remote to be used with any IR receiver if we are unable to locate the TV1 IR tab.

Remote A/B Switch Overview

- The internal A/B switch allows selection between two frequencies to help in instances of UHF interference; this can include conflicts with another UHF Pro remote or UHF interference in general. The A/B toggle is located in the battery compartment of the remote control.
- Band A: In band A, the remote uses the 369.5 MHz frequency for TV1, while using 375.3 MHz for TV2. This is the band of UHF Pro recognized by all Dish Network UHF Pro receivers. With 21.0 remotes, odd remote addresses use band A. For this reason, when addressing a remote to a non-VIP receiver we need to ensure the switch is in the 'A' position or if we are using a 21.0 remote we need to ensure we use an odd remote address.
- Band B: In band B, the remote uses the 394.3 MHz frequency for TV1, while using 388.3 MHz for TV2. With 21.0 remotes, even remote addresses use band B. This band is only recognized by VIP series receivers.

Connectivity Benefits

Better Technology

Customize Your TV Experience

- Pay your bill and manage your account.
- Caller ID on your TV screen.
- Remote DVR access: access your ViP® DVR remotely via computer or iPhone™.

Access Pay-Per-View with the Touch of a Button

- Rent movies without leaving your home, right through your TV.
- No processing charges/fees, and no need to call.
- Pay for your Pay-Per-View purchase on your next bill.

Access Additional Programming, Games, and More

- Thousands of movies and TV shows are available on demand.
- Interactive Applications: Play games, check weather, news, sports, even shop.

Better Customer Experience

Quality Service

- Diagnose technical problems: connected receivers can track, log and notify us of any problems.
- Access customer support application: get easy troubleshooting tips for the most common problems.

Privacy

- Your privacy is guaranteed: connecting your receiver will not compromise your privacy.

Additional Savings and Flexibility

Stay Connected

- Plugging in your receiver will not interrupt your phone line or Internet connection.
- All required accessories are included at no additional cost.

Connectivity Process

Step	Task Owner	Process
1	Technician	Evaluate the customer's Internet connection during the site survey
2	Technician	Determine the best way to connect their ViP receiver
3	Technician	Educate the customer on the benefits of connecting the receiver to their home network while discussing the installation plan • "Connecting your DISH Network ViP® series DVR receiver to your broadband home Internet service allows you instant access to thousands of on-demand movies and television shows. Plus you'll have the ability to order Pay-Per-View movies and events using your remote control, and even manage your DVR directly from your remote computer or compatible mobile device."
4	Technician	Inform them that you will provide the devices and/or accessories to complete the connection free of charge
5	Technician	Complete the installation and connect the ViP receiver to the customer's network

6	Technician	Confirm connectivity by performing the STBH Live Confirmation or Send Status test
		• STBH Live Confirmation
		  ○ Confirms the broadband connection by finding the IP address
		  ○ Checks the receiver signal strength
		  ○ Prompts the data transmission and ensures the confirmation code is received
		  ▪ Without completing this important step, it is possible the connection is not working properly
		  ▪ STB Health Live Confirmation is available on the 211, 211k, 222k, 512, 522, 625, 622, 722
		• Sent Status test (for receiver models not supported by STB Health Live Confirmation
		  ○ Transmits data back to the server just like STB Health Live Confirmation, but does not provide a confirmation code

Configuring Receivers

Step	Process
1	Using the DISH remote control for the receiver that is connected to the home network, access the Network Setup screen by pressing MENU, selecting System Setup, Installation, Broadband Setup and then Network Setup
2	Verify the IP address is populated (not all 0s) • If the IP address is all 0s, select Reset Connection • An Attention 875 message will display briefly and then you will return to the Network Setup screen
3	Verify the Connection Status on the Network Setup screen shows Connected Online and that the IP address does not show all 0s • If the IP address shows all 0s or the Connection Status shows Not Connected, refer to the Installer Reference Handbook
4	Select Done to exit the Network Setup screen
5	Verify the receiver can successfully connect to DISH by pressing MENU on the remote control, selecting System Setup, then Diagnostics Select Connection to test the Internet connection
6	• The Connection option also test the phone line, if connected. The results should display Broadband Connection OK • If a phone line is not connected to the receiver, connection results will display Phone Connection Failure. This is okay

Connectivity Device Hierarchy

Use the matrix below to determine the correct connectivity device to use.

Receiver Configuration	Preference Order
Hopper with Sling and Joey on account	1. Ethernet connection to Hopper with Sling 2. Built in Wi-Fi 3. HIC
Hopper and Joey on account	1. Ethernet connection to Hopper 2. HIC if existing coaxial cable can be used for HIC connection 3. Wi-Fi Adapter 4. HIC with a new coaxial cable run for the HIC
1 ViP receiver on account	1. Ethernet 2. SlingLink 3. Wireless Adapter 4. Phone line 5. DishCOMM Modem
2+ ViP receivers on account	1. SlingLink 2. Ethernet 3. Wireless Adapter 4. Phone line 5. DishCOMM Modem
No ViP receivers on account	1. Phone line 2. Phonex

Modem

What is a Modem?

A network device that converts a broadband cable or DSL line into a single Ethernet cable with access to the internet

- A modem by itself provides internet access to only 1 device (usually a computer)
- To connect multiple devices to the internet, **a modem must be connected to a router**
- Adding a switch to a modem without a router does not work
- Some modems have router capabilities - these devices are knows as Gateways

Identifying a Modem

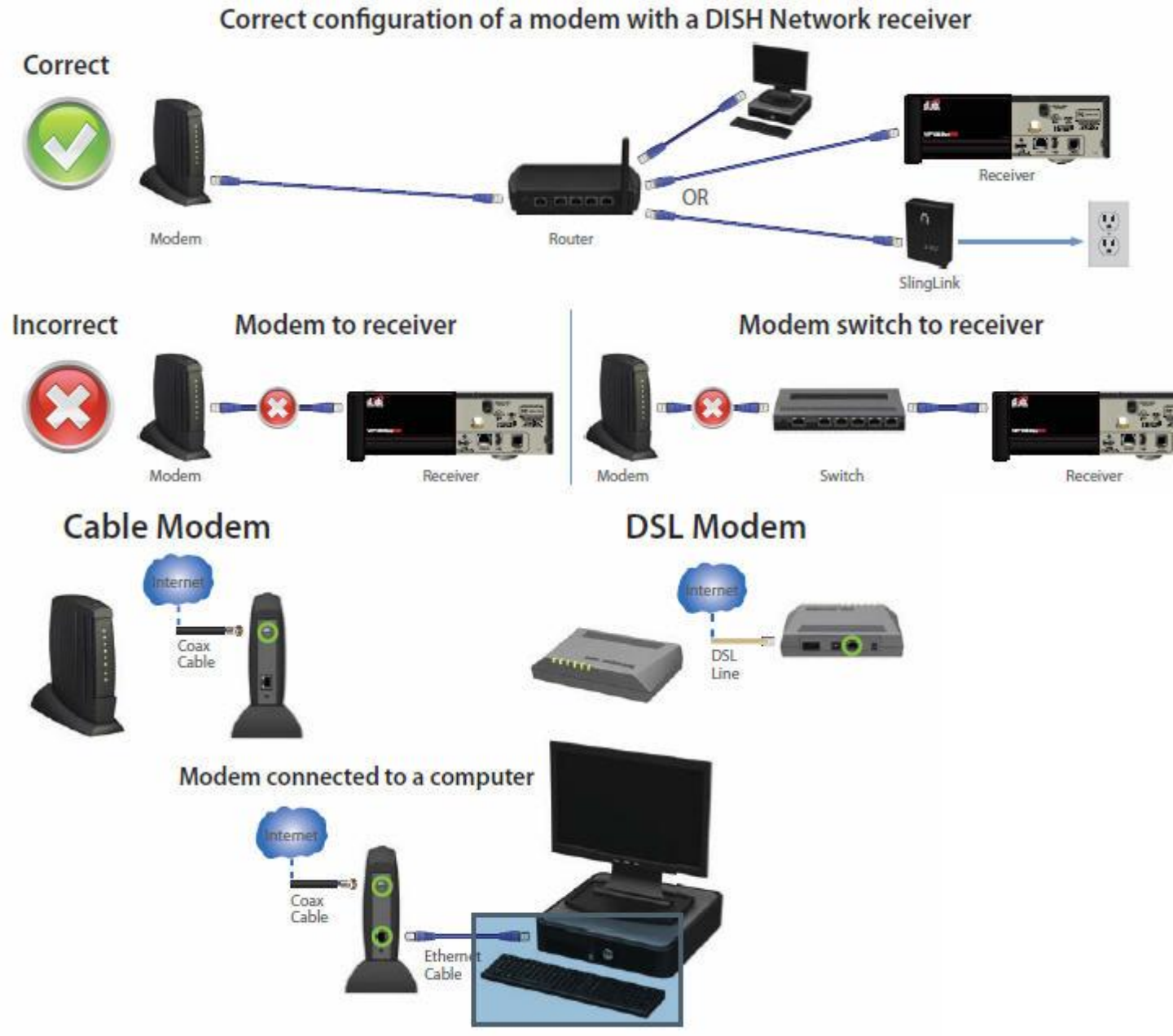
There are 2 types of modems: CABLE and DSL

- Generally, the word "Modem" will be printed on the device
- A modem will have a cable or DSL line connected to it and only 1 Ethernet out port
    - A modem may also have a USB port but only 1 Ethernet out port
- Sometimes it is difficult to tell the difference between a modem and a modem with router capabilities

Connecting a DISH Network Receiver

Connecting a receiver to the internet using an Ethernet cable or a SlingLink requires an open Ethernet out port

- A modem by itself only has 1 Ethernet out port which is usually connected to a computer
- If a receiver is connected to a modem's only Ethernet out port the customer's computer will no longer have internet access
- Adding a switch to a modem does not work – only a router can be added to a modem to add additional Ethernet out ports
- A modem must be connected to a router with an open Ethernet out port to connect a receiver to the internet
- Use an open Ethernet out port on the router to connect the Ethernet cable or SlingLink


Correct configuration of a modem with a DISH Network receiver
Correct
Modem
Router
OR
Receiver
SlingLink
Incorrect
Modem to receiver
Modem
Receiver
Modem switch to receiver
Modem
Switch
Receiver
Cable Modem
Internet
Coax Cable
DSL Modem
Internet
DSL Line
Modem connected to a computer
Internet
Coax Cable
Ethernet Cable

Router

What is a Router?

A network device connected to a modem that splits the internet from a single Ethernet out port to multiple ports

- If a customer only has a modem, a router is required
- If a there are no open Ethernet out ports on a router, a switch needs to be installed to increase the number of open ports

Identifying a Router

There are 2 types of routers: Wireless (WiFi) and Wired (Non-WiFi)

- Generally, the word “Router” will be printed on the device
- Both types of routers have Ethernet out ports that provide Ethernet cable connections to other equipment
- Typically, a router will have 5 ports (1 in and 4 out)

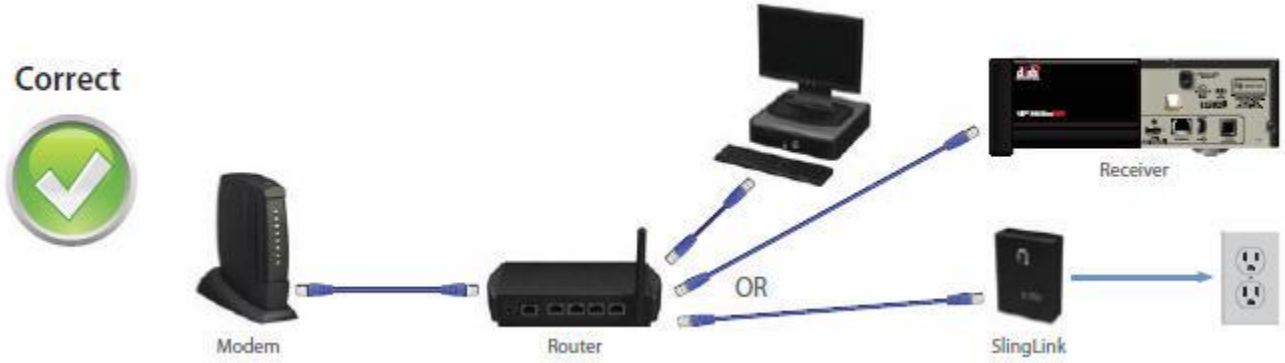
Connecting a DISH Network Receiver

- A modem must be connected to a router to connect a receiver to the internet
- Most routers require software to work properly with the customer’s computer, it is usually packaged with the router

When a modem is connected directly to a computer, a router is needed

Correct Configuration of a Router with a DISH Network Receiver

Correct



Router

Many routers are capable of wireless networking and will have an antenna. Not all wireless routers have antennas
Ethernet in port for connecting the modem to the router
4 out ports for Ethernet cables to be connected from the router to equipment (computer, video game, receiver, SlingLink, etc)
In
Out

Wireless Adapter

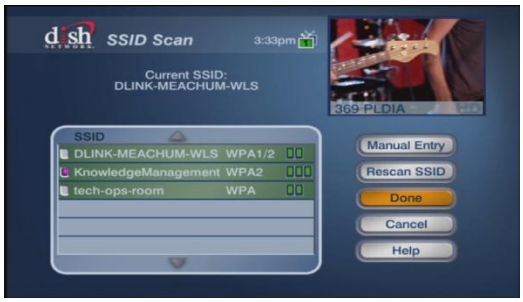
Prior to Installation

- Before proceeding with the wireless adapter installation perform the following:
- Follow the Connectivity Hierarchy Matrix (See appendix)
- Attempt to install direct Ethernet cable
- Attempt to install SlingLink
- If neither option works, confirm the receiver you wish to connect is compatible with the wireless adapter (622,722,722K)
- Confirm the customer has broadband and a wireless router or gateway
- Confirm the customer has the password to their network (WEP or WPA encryption key or WPA2 pass phrase)
- Let the customer know you will need them present during parts of the installation

Installing the Wireless Adapter

1. Complete the receiver installation and initial software download before attempting to connect the wireless adapter.
2. Plug in the Wi-Fi adapter to the rear USB port on the receiver using the USB extension cable. Never insert the adapter directly into the receiver, always use the supplied cable. This will allow you to position the adapter for the best possible reception.
3. Do not secure with the plastic cradle and Velcro until after you have completed the wireless setup. You will need to reposition the adapter once setup is complete to get the strongest possible signal.
4. Once the receiver recognizes the adapter the following screen will be displayed. Select Setup to enter the wireless adapter setup Wizard.
5. The wireless setup wizard will start. First, it will scan for available networks.

6. Wireless networks displaying two or three bars are preferable. Networks only displaying one bar will not provide the best customer experience due to slower connection rates.
7. Select the name (SSID) of the desired wireless network from the list and select Done. You will need to confirm with your customer which network is the correct one if more than one option appears.



To proceed with this next step the customer must be present. The customer will need to have their Job Aid WEP or WPA encryption key or WPA2 pass phrase available, if any.

Do not enter this data yourself. The customer must enter it to ensure their network remains

secure.

8. Have your customer enter the encryption key or passphrase using the remote and onscreen keypad. Advise them the password is case sensitive.
9. Once the customer has input the wireless network encryption key, select Done.
10. The system will begin testing the network onnection. The following screens will be displayed.

11. When testing is successfully completed, the following screen will be displayed. SelectDone. If this test fails, refer to the troubleshooting section of this Job Aid.

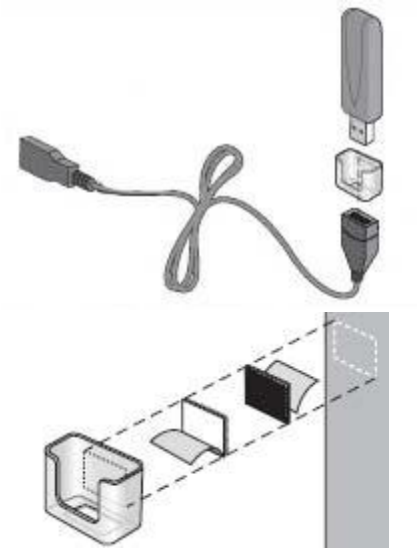
12. The wireless adapter signal strength screen will display

13. Move the USB adapter to achieve the maximum signal strength. If the signal strength is below 40, skip ahead to the 'If there are signal strength issues' section of this job aid.
14. Once the signal strength is acceptable (maintaining higher than 40) select OK.

15. Next, perform send status to ensure your connection is working properly
    - Menu
    - System Setup
    - Diagnostics
    - Analysis
    - Send Status

16. Click Send Status

17. If send status fails go to the troubleshooting section of this job aid
18. Once signal is at an acceptable level and send status is completed, obtain the customers permission and secure the plastic mini-cradle using the included Velcro. Do not secure to a finished surface or to the customer's television.



Signal Strength Issues

If you cannot achieve signal strength of at least 40 at the time of connection, do not continue with the wireless adapter option.

Use another connectivity solution for the customer if possible and fill out the Connectivity Tracker to capture your experience.

Disconnecting the Adapter

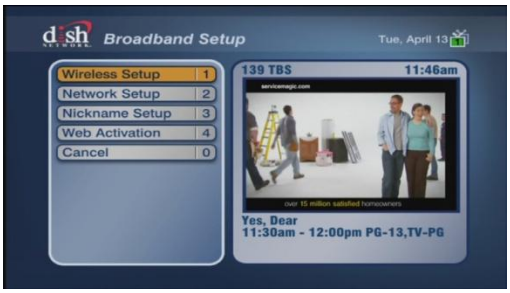
If the wireless adapter is disconnected during setup, a popup will be displayed.

When the wireless adapter is reconnected, the following popup will be displayed.

Select Setup to proceed, you will be taken to the wireless setup screens again.

If you need to access the Wireless Setup menu at a later time select:

1. MENU button
2. System Setup – Option 6
3. Installation – Option 1
4. Broadband Setup – Option 8
5. Wireless Setup – Option 1



Troubleshooting

Adapter not recognized

If the adapter isn't recognized or you don't have the wireless set up option it means the receiver does not have the most current software version.

Wireless test fail

If the wireless test fails, go through the wireless setup process one more time to make sure the correct network was selected and the correct passwords were entered. If the test fails again, perform the following steps:

- Reset the router

- Reset the modem

- If you complete these steps and test again and it still fails, the wireless adapter is not a good solution for this customer. Connect using a different connection method.

Send status fail

If send status fails, follow the same steps as the wireless test fail

Connectivity Troubleshooting Matrix
Broadband Troubleshooting

1	Check Broadband Configuration	Check that the wiring between your DISH receiver and your broadband source is configured properly using dish.com/wiring.
2	Reset Receiver	If the issue is only on ONE receiver, unplug the DISH receiver for 10 seconds and plug back in. It may take up to 5 minutes for the reset process to be completed.
3	Reset Broadband Router/Modem	Unplug your broadband router or modem for 10 seconds and plug back in.
4	Check LED lights	Check the DSL light is steady green and the Internet light is steady or flashing green. If there is no light or the light is red, have the customer contact their ISP.
5	Perform “Send Status”	MENU 6 - “System Setup”, 3 - “Diagnostics” and select “Analysis” and “Send Status”. Check for confirmation of call out success or a confirmation code from STBH Live with all circles under “Status” showing green.
6	Access Internet Using Home Computer	For DISHOnline, Sling, or DISH Remote Access issues, have the customer access the IP based feature from their home computer.
7	Transfer to Broadband	Transfer the call to Broadband.
8	Try different port on Router	Connect the Ethernet cable from the current port on the router to a different known working port.
9	Bypass Router and Connect to Modem	Bypass the router and connect the computer directly to the modem; if the computer cannot access the Internet, have the customer contact their ISP.
10	Check the LAN connection is enabled	Windows: Start - Settings - Network Connections - verify Local Area Connections is enabled; if the connection shows Disabled, right click on the connection icon, and select Enable. Mac: System Preferences - Network Preferences - Built in Ethernet is disp

11	Contact Manufacturer	Contact the manufacturer of the device directly if you are unable to resolve the issue.

Broadband Troubleshooting — Wireless Adaptor

1	Check Adapter Connected to Receiver	Check that wireless adapter's extension cable is connected to the DISH receiver's USB port.
2	Check Connected to correct Network	Verify the DISH receiver is connected to the correct wireless network.
3	Reset Receiver	If the issue is only on ONE receiver, unplug the DISH receiver for 10 seconds and plug back in It may take up to 5 minutes for the reset process to be completed..
4	Reset Broadband Router/Modem	Unplug your broadband router or modem for 10 seconds and plug back in.
5	Check LED lights	Check the DSL light is steady green and the Internet light is steady or flashing green. If there is no light or the light is red, have the customer contact their ISP.
6	Check Another Port on the DISH Receiver	Connect the Wireless Adaptor's Extension Cable to another port on the DISH receiver.
7	Access Internet Using Home Computer	For DISHOnline, Sling, or DISH Remote Access issues, have the customer access the IP based feature from their home computer.
8	Connect Hard Wire to Router	If you are able to do so, direct connect the DISH receiver to the home network's router using an Ethernet cable.
9	Perform "Send Status"	MENU 6 - "System Setup", 3 - "Diagnostics" and select "Analysis" and "Send Status". Check for confirmation of call out success or a confirmation code from STBH Live with all circles under "Status" showing green.
10	Transfer to Broadband	Transfer the call to Broadband.
11	Connect Wireless Adaptor to your Home Computer	Connect Wireless Adaptor to your Home Computer and test for connectivity.
12	Create Wireless Adaptor RA	Create RA for Wireless Adaptor.

ON-SCREEN SETUP HOPPER/922

After physically connecting the Wi-Fi Broadband Connector to the receiver, follow these instructions to properly configure

Configure Wi-Fi Broadband Connector

"Attention 396" will display automatically. Select "Wizard"

1.

Attention
396
A USB Wireless Adaptor of
MAC Address: 00:26:F2:48:79:69
has been connected to the receiver.
To start using the wireless connection,
select the PBC Setup / Wizard button.
To set up or change your wireless settings at a later time, open the Settings menu and
select Broadband.
PBC Setup
Wizard
Later

Select the desired wireless network (from the list on the "SSID Scan" screen) and select "Next"

2.

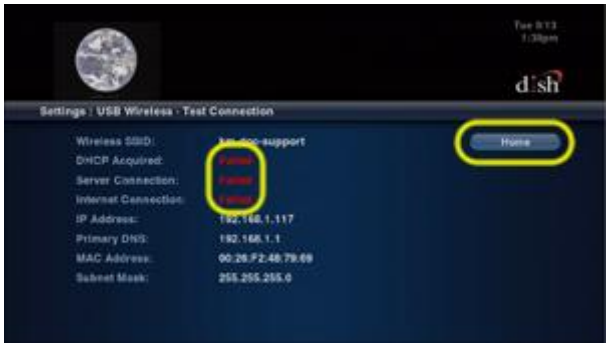
Enter wireless network password (WEP or WPA encryption key) and select "Done"

3.

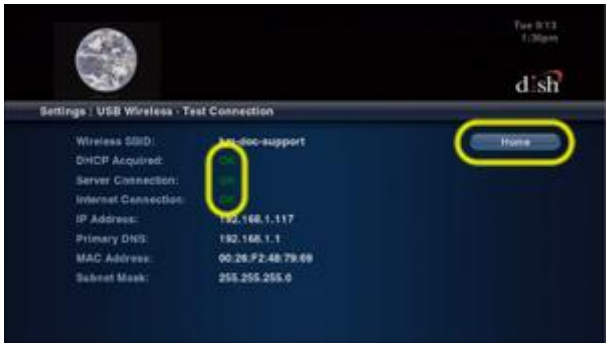
The receiver will complete a network connection test

1. If the test fails, select "Home," then "Wizard" to re-enter the desired wireless network and network password. If the problem persists, troubleshoot.

4.



2. If the test is successful, select "Home" to go to the "USB Wireless" screen



The "USB Wireless" screen will display the signal strength. If it is not above 40, attach the USB extension cable and move to a different location to acheive stronger signal. Select "Close"

5.

Test Wi-Fi Broadband Connection

1. Press the MENU button on the remote
2. Select "Broadband Setup"
3. Select "USB Wireless"

The screen will advise the user of the connection status, and strength

1. If the connection has failed, troubleshoot

4.

2. If the receiver is connected, select "Close"

HOPPER INTERNET CONNECTOR

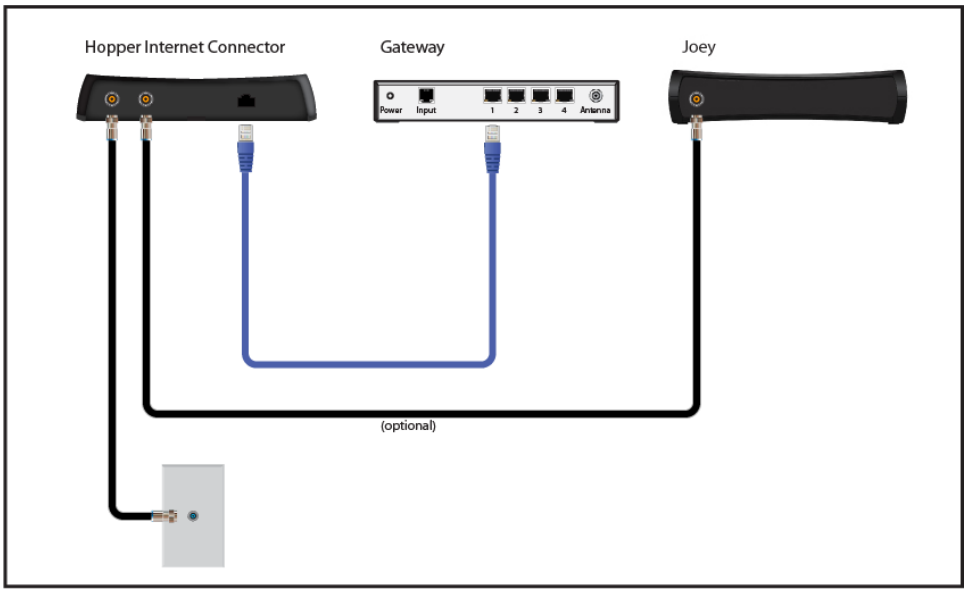
A connectivity device that provides a direct connection to all Hopper and Joey devices over coax cabling. Only to be used for Hopper/Joey.

Hopper Internet Connector

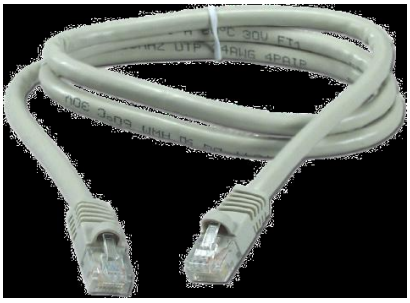
Front

Back

Physical Setup



Direct Ethernet Connection



- Direct Ethernet cable connection from router/switch to Hopper is always the preferred connection if the router is nearby
    - Hopper manages the features that are IP-dependent (IPVOD, On-Demand, etc.)
- Least degradation to bandwidth for TV Everywhere
- If Hopper is IP-connected, it shares connection with all linked Joeys so they can enjoy IP features as well

Hopper Internet Connection (HIC) – Use Existing Cable

- New connectivity device that uses coaxial wiring feeding Hoppers and Joeys to connect them to the Internet
- Used with existing pre-wired cable or when using the PASS-THRU to a Joey
- Preferred method of connectivity if customer wants to use TV Everywhere

USB Wi-Fi Adapter on Hopper

- Wi-Fi Adapter offers convenient, fast installation to connect Hopper
- Hopper shares connections with all linked Joeys so they can enjoy IP features as well
- If customer isn't likely to use TV Everywhere, achieves minimum connectivity needs (Order PPV with remote)

- Primarily an offer to existing DISH customers, but used on new installations

Hopper Internet Connector (HIC) – Running New Cable

- New connectivity device that uses coaxial wiring feeding Hoppers and Joeys to connect them to the Internet
- Used when running to cable to the HIC/Router location
- Preferred method of connectivity if customer wants to use TV Everywhere

SlingLink

Installation Considerations

- When using a SlingLink you must test the circuits you will be using the Home Plug Tester as you have been trained to do already
- If a surge protector is used, it must be approved for use with SlingLink (or HomePlug), and the adapter or satellite receiver must be plugged into the SlingLink outlet of the surge protector
- You may also use the 3-Plug Outlet Adapter (Outlet Splitter - P/N 156672) to provide additional plugs on the circuit if required.
- The SlingLink and any networked receiver must be on the same home electrical circuit to work
    - In some homes, customers have multiple electrical circuits (more than one electrical breaker box in the house)
    - A single SlingLink may not always crossover multiple home electrical circuits

Conneting Receivers Using SlingLink

1. Test the outlet in question using the Home Plug Adapter to ensure the SlingLink will work
2. Connect one end of an Ethernet cable to an available ETHERNET (LAN) port on the router, gateway, or Ethernet switch
3. Connect the other end of the Ethernet cable to the ETHERNET port on the SlingLink
4. Plug the SlingLink into an electrical outlet located near the router
    - The SlingLink and the DISH Network satellite receiver's power cord should both be plugged directly into an electrical wall outlet
    - Do not plug the adapter or satellite receiver into an outlet that is controlled by a wall switch or into GFI electrical outlets
5. Verify function by checking adapter lights
6. Plug the receiver

Configure Receiver into the Network

1. How to Configure the Receiver into the Network
2. Using the DISH Network remote control for the receiver that is connected to the home network, access the Network Setup screen by pressing MENU, selecting System Setup, Installation, Broadband Setup, and then Network Setup
3. Verify the IP address is populated (not all 0s)
    - If the IP address is all 0s, select Reset Connection
    - An Attention 875 message will display briefly, and then you will return to the Network Setup screen
4. Verify the Connection Status on the Network Setup screen shows Connected Online, and that the IP address does not show all 0s
    - If the IP address shows all 0s or the Connection Status shows Not Connected, refer to the Installer Reference Handbook
5. Select Done to exit the Network Setup screen

6. Verify the receiver can successfully connect to DISH Network by pressing MENU on the remote control, selecting System Setup, then Diagnostics
7. Select Connection to test the Internet connection
    - The Connection option also tests the phone line, if connected. The results should display Broadband Connection OK
    - If a phone line is not connected to the receiver, connection results will display Phone Connection Failure. This is OK

Sling Adapter

Sling Adapter Installation

1. Connect the USB connector on the Sling Adapter to the back of the DISH Network receiver
2. The Sling logo on the top of the Sling Adapter should illuminate to indicate it is powered on
3. Click OK on any on-screen messages
    - If you do not receive this message, ensure the ViP722 DVR or ViP722k DVR has the latest software
4. Set the Sling Adapter on the top of the receiver

Note: The Sling Adapter can also be connected to the front USB connection on the DISH Network receiver. This should be the last installation option used as it is not aesthetically pleasing.

Using Remote Viewing

Using their computer customer should:

- Log in to My Account on dish.com
- Click on DISH Remote Access (located at the left of the screen)

Note: If the customer does not have an account, then assist them to creatie one.

Once logged in, there are a few initial steps to complete before watching live TV.

1. Ensure the receiver with the Sling Adapter connected is listed at top of the screen, if not, select the appropriate receiver
2. Click Watch Live TV (located at the top of the screen)
    - This button appears once the Sling Adapter is connected to the DISH Network receiver
3. Click Accept on the Terms of Use
4. Follow the on-screen instructions to download the plug-in
    - On-screen instructions can change without our knowledge but should always be followed and read completely
    - Setup example: Click the yellow bar and select Install Active X Control

Note: This bar may not appear depending on the customer's computer settings

5. Click Install
6. Select the desired program via EPG or on-screen controls
    - Click Watch on Web

Educate the customer on how they access TV Everywhere features on their compatible mobile device.

Customers must:

- Download the DISH Remote Access App to their compatible mobile device:
    - iPhone / iPod touch – iTunes Store
    - Blackberry – link available on dish.com/tveverywhere/remoteaccess
    - Android – Droid App Market
- Log into the DRA app using the same login to access their DISH account on dish.com

- Select a live or DVR event to remote view on their mobile device

Sling Adapter FAQs

Q: What receiver models are compatible with the Sling Adapter?

A: Only the 722 and 722k are compatible; the 622 model is not compatible with the Sling Adapter.

Q: If I have a Sling Link am I ready for remote viewing?

A: No, a Sling Link (which is an Ethernet through power-line adapter, also known as a HomePlug) is a connectivity device. The Sling Adapter is an additional device that is needed for Remote Viewing.

Q: Can existing customers order a Sling Adapter for the Technician to deliver and install?

A: No, the Sling Adapter must be ordered through the CSC or at www.Dish.com. The product will then be shipped to the customer for self installation. Do not call to modify an existing customer work order.

Q: Can I modify a New Connect work order to add a Sling Adapter?

A: Yes, New Connect work orders are the only work orders that can be modified to add the Sling Adapter. Once the modification is complete the Technician may deliver and install the product.

Q: Is it possible to use both a Wi-Fi adapter and a Sling Adapter at the same time?

A: Yes, there are front and rear USB ports on the 722 and 722k receivers. Both of these ports may be used simultaneously for a Wi-Fi adapter, a Sling Adapter, or external hard drive.

Q: Can a USB hub be connected to the USB port of a 722 or 722k to connect multiple accessories?

A: No, USB hubs are not currently supported for connection to DISH Network receivers.

ACCESSORIES.

Don't have everything you need to complete your home theater? We have you covered. DISH offers high-quality components at low prices..

AVAILABLE ITEMS.

- 15' HDMI cable – $29
- 30' HDMI cable – $59
- 6' optical cable – $19
- 12' optical cable – $29
- Speaker mount – $20
- Set up TV on Stand - $99
- TV Full Motion Bracket – $49 (TV sizes larger than 32")
- TV Tilt Bracket – $79 (TV sizes between 24" and 40")
- TV Tilt Bracket – $99 (TV sizes between 41" and 80")
- TV Full Motion Bracket - $199 (TV sizes between 32" and 70")
- Screen cleaner – $15
- Component Integration - $49
- Wireless Network Setup - $99
- Power Relocation - $149
- Surge Protector - $29

Overview

HDMI (High-Definition Multimedia Interface) is a compact audio/video cable that connects audio and video components, such as DISH receivers, Blu-ray players, or game systems to HDTVs. HDMI cables provide the best picture quality possible.

What Changed

A new Smart Home Services product is now available: an 8-foot HDMI DISH-branded cable for just $19. This is an excellent price, especially when compared to store costs of $50 or more. All HD or ViP DISH receivers are HDMI-capable, allowing viewers to see programming in high definition. DISH currently provides one 7-foot HDMI cable with each HD or ViP receiver to ensure customers get the best picture quality possible from the receiver to their television.

Appropriate times to offer the 8-foot or longer HDMI Cables for purchase from DISH:

- The customer may need more than one cable in order to complete the hook-up, such as in the case of an A/V receiver
- The customer has additional components that could utilize an HDMI cable for better picture quality
- If you notice that a customer is not currently using an HDMI cable with their Blu-ray player, for example, you can now offer customers an 8-foot HDMI DISH-branded cable
- The customer's equipment is far enough from the TV that it requires a longer cable

Selling Features of the 8-foot DISH HDMI Cable:

- The new 8-foot HDMI DISH-branded cable for $19 is a high-speed-rated cable (HDMI 1.4), capable of handling full 1080p video (including 3D), digital audio, and Ethernet for improved picture and audio quality
  - o It features gold tips and shielded wires with a mesh covering to allow for flexibility while still protecting the inner part of the cable and reducing interference
  - o It supports Audio Return Channel-enabled televisions and can either send or receive audio via HDMI, both upstream and downstream

What I Need to Do

Smart Home Services' 4-Step Process

- Step 1: Identify needs and opportunities
- Step 2: Inform your customer of what you identified
- Step 3: Offer the customer your solution
- Step 4: Respond to the customer

Helpful hints for using the 4-step process to ASK customers about the 8-foot HDMI DISH-branded cable for $19:

Step 1
Look at customers' TV setups and cables when performing the Site Survey
It is a great ASK opportunity when:
o Customers have equipment that support HDMI but they are currently using something else
o Connecting components as part of a Smart Home Services installation for which the customer does not have the necessary cables

Step 2
Let customers know they will enjoy better picture and sound quality when using equipment such as their Blu-ray player if they upgrade to an 8-foot HDMI DISH-branded cable for $19

Step 3
Ask the customer if they would like to purchase an 8-foot HDMI DISH-branded cable for $19
Buying the cable from you will save them a trip to their local retailer to purchase a cable. Additionally, many local retailers sell HDMI cables for as much as $50 or even more

Step 4
Add the item to the customer's bill or take immediate payment, using the Tech Store on your mobility device
Attach the new 8-foot HDMI DISH-branded cable

INSTALL 2 SPEAKERS.

- Expand from 5.1 to 7.1 surround sound.
- Add speakers outdoors or in another room.
- On or in-wall speaker installation.
- Wiring concealed in-wall.
- Integrate speakers with A/V receiver.

INSTALL 2 SPEAKERS

Installation Includes

- On or in-wall speaker installation
- Wires concealed in-wall or paintable wire molding
- Speaker wire (16-gauge)

Not Included

- Assembly of furniture
- Painting

HOME THEATER INSTALLATION.

Optimize your TV with a surround-sound speaker system. DISH Smart Home Services will install your speakers, conceal wires in the wall or with paintable wire molding, calibrate the audio, and integrate your speakers with an A/V receiver; we provide the speaker wire.

NO IN-WALL WIRING.

- Two front, two rear, one center, one subwoofer (5.1)
- Wiring concealed in paintable wire molding.
- Connect and configure your A/V receiver.

HOME THEATER INSTALLATION - NO IN-WALL WIRING

Installation Includes

- Set up: Two front, two rear, one center, one subwoofer
- Place on stand or furniture
- Speaker wire (16-gauge)
- Surface run all wires to speakers
- Wiring concealed in paintable wire molding
- Connect and configure A/V receiver
- Education on setup and use
- Clean up work area

Not Included

- Installing power cord in-wall
- Any in-wall wiring
- Assembly of furniture

HOME THEATER INSTALLATION.

Optimize your TV with a surround-sound speaker system. DISH Smart Home Services will install your speakers, conceal wires in the wall or with paintable wire molding, calibrate the audio, and integrate your speakers with an A/V receiver; we provide the speaker wire.

IN WALL WIRING.

- Two front, two rear, one center, one subwoofer (5.1).
- Wiring concealed in-wall.
- Connect and configure your A/V receiver.

HOME THEATER INSTALLATION - IN-WALL WIRING

Installation Includes

- Set up: Two front, two rear, one center, one subwoofer
- Install speakers in-ceiling or in-wall
- Speaker wire (16-gauge)
- Wiring concealed in-wall or paintable wire molding
- Education on setup and use
- Clean up work area

Not Included

- Installing power cord in-wall
- Assembly of furniture
- Attaching baseboards

TELEVISION SETUP.

From tabletop setup to custom wall mounts, DISH Smart Home Services help you enjoy TV from every point of view. We'll install the wall brackets, connect and configure audio and video components, neatly tie or conceal wires, and even set up remote control programming.

Call **1-888-615-3724**

ON A STAND.

- Place TV on stand
- Set up video sources
- Education on setup and use

n

TV INSTALLATION - ON STAND

Installation Includes

- Place TV on stand
- Connect video sources
- Organize and secure wiring
- Re-label inputs in TV menu
- Program DISH remote to work with TV
- Education and setup and use
- Clean up work area

Not Included

- TV stand
- Installing or moving electrical outlets
- Installing power cord in-wall
- In-wall wiring
- Assembly of furniture
- Connecting speakers
- Audio system setup

Overview

Smart Home Services is offering four new TV brackets with added features and compatibility with a greater number of televisions to meet our customers' needs. These new TV brackets take up less space in the vehicle and will replace our current brackets. Updated Smart Home Services brochures will be released later this spring. Until those brochures are released, refer to this training on DNSPortal if you have questions about TV bracket features.

What Changed

The four new TV brackets will replace the brackets that we currently offer and will be offered for the same price. The size ranges for the new brackets are slightly different but are compatible with TVs up to 80 inches, as illustrated in the chart below. These new brackets also come with extensions to accommodate TVs with larger VESA patterns.

Previous Bracket	New Bracket	Price	Max TV Weight	Installation Service
Full motion bracket < 32”	Full motion bracket <32”	$49	35 lbs	TV wall install 40” or smaller
Full motion bracket 42”-65”	Full motion bracket 32”-70”	$199	125 lbs	Varies by TV size
Tilt bracket 32”-46”	Tilt bracket 24”-40”	$79	100 lbs	TV wall install 40” or smaller
Tilt bracket > 47”	Tilt bracket 41”-80”	$99	150 lbs	TV wall install 41” or larger

What I Need to Do

The installation steps for the new TV brackets are similar to the previous brackets except for a few added features. When installing these brackets, refer to this training and the packaging instructions.

Full motion brackets:

• The large bracket can mount to all stud bays up to 24” with an extension bar. If the stud bay is wider than 17”, contact your manager for the extension bar

Full motion bracket 32”-70”

Full motion bracket < 32”

To extend the large full motion bracket to accommodate larger VESA patterns, use the included hex wrench to remove the end caps from the horizontal rails, screw in the included extension rails and replace the hex screws.

Tilt brackets:

Tilt bracket is collapsed for smaller packaging

• The tilt brackets are collapsible, pull the bracket open with your hands until it is fully expanded and all joints are at a 90 degree angle

• Hand straps allow you to mount the rails to the wall plate easily. Pull the strap to release the tab that locks the brackets in place, release the strap to lock the tab.

o Customers can use a pad lock to lock the rails for added security

Before you mount a TV: Make sure that the wall plates are not wider than the TV.
The bracket should not be visible once the TV is mounted. If the bracket is too wide, consider a smaller bracket if possible.
Ensure that the TV does not exceed the bracket's weight requirements.

COMPONENT INTEGRATION.

- Connect Internet ready devices. (IPTV, computer, gaming systems).
- Wireless or wired connection.
- Education on setup.

COMPONENT INTEGRATION

Installation Includes

- Integration of up to 2 devices (Computer, printer, game system)
- Wireless or wired connection
- Software updated for connected devices
- Education on setup

Not Included

- Updated computer software
- Internet service
- Securing wireless network

WIRELESS NETWORK.

- Installation of wireless router.
- Password protect network.
- Connect Internet ready devices (IPTV, computer, gaming systems).
- Education on setup.

WIRELESS NETWORK

Installation Includes

- Installation of wireless router
- Password protect network
- Install router software on 1 computer
- Integrate up to 4 devices (Computer, printer, game system)
- Education on setup
- Router

Not Included

- Internet service
- Set up file sharing
- Software installation (Except router software)
- Installation of any additional hardware or devices

Wireless Network Installation - $99

Metal Conduit Power Relocation kit

Overview

To comply with national and local electrical codes, Smart Home Services technicians must now use a Metal Conduit Power Relocation Kit (PN: DN003963) on all appointments in New York City, Long Island, the City of Chicago, and for certain types of structures, including any building with metal studs.

What Changed

The Metal Conduit Power Relocation kit offers added protection from possible electrical damage by using metal shielding around the power cable and should be used exclusively in the following situations:

• On all appointments in New York City, Long Island, and the City of Chicago (check the appointment address on the work order to know if the appointment is in those cities.)
• When the customer's home/business is constructed with metal studs
• On all Commercial and Public/Private property

Metal conduit shields the power jumper that connects the two cut-in boxes

Why It's Important

Electrical insulation is required when providing power relocation for any structure with metal studs. In addition, New York City, Long Island, Chicago, and any Commercial/Public/Private property have higher standards for electrical code compliance. The Metal Conduit Power Relocation Kit meets these higher standards.

Recommended Actions

Use the Metal Conduit Power Relocation Kit instead of standard power relocation:

• On any appointments in New York City, Long Island, and Chicago. o Use the address of the appointment in ETAdirect to determine if it is inside the City of Chicago, Long Island, or New York City

• The customer's home is constructed with metal studs o Use the stud finder to determine the stud material

• On all Commercial and Public/Private structures

All offices should carry enough metal conduit power relocation kits to support the appointments that require them.

To install the Metal Conduit Power Relocation Kit, follow the exact same steps as you would for standard power relocation. The only installation difference with the metal conduit kit installation is that the brush plate comes pre-assembled, saving you the extra step of attaching it to the cut-in box.

Power Relocation installation instructions can be found on DNS Portal.

GE Surge Protector

Overview

As an industry leader in home entertainment solutions, DISH Smart Home Services is always searching for ways to meet consumer needs. One of the biggest needs when it comes to providing these solutions is finding available power outlets for TVs, soundbars, receivers, and other electronics. Perhaps more importantly, these power outlets need to deliver electricity securely to protect the expensive electronics from dangerous electrical spikes. That's why DISH Smart Home Services is proud to add this GE Surge Protector to its extensive lineup of customer solutions!

Product Description

DISH Smart Home Services offers this surge protector at a retail price of just $29 to customers and features:

- 10 power outlets
- 2 USB ports
- 6 foot power cable
- Protection for up to 3000 joules
- GE warranty for up to $400,000
- Integrated Circuit Breaker
- Outlet safety covers

Recommended Actions

To offer this product, follow the 4-step ASKing Process:

- Step 1: Identify needs and opportunities
- Step 2: Inform your customer of what you identified
- Step 3: Offer the customer your solution
- Step 4: Respond to the customer

Here are some suggestions for using the 4-step process to ASK customers about surge protectors:

Step 1: Identify

- Customers with a limited number of available electrical outlets are a great fit for surge protectors.
- Customers with multiple electronic devices can benefit from the added security protection of a surge protector over a standard wall outlet.

Step 2 and 3: Inform and Offer

Let the customer know that you have a surge protector you can offer them for $29 which will help protect their valuables. Tell them about all the great features such as the 10 outlets, USB ports, and manufacturer warranty.

Step 4: Respond

If your customer would like to purchase the surge protector, contact Work Order Modifications to complete the purchase.

Troubleshooting Job Aid (TJA)

1. Preparation

- Ensure the SBSM is charged
- Review the account notes
- Contact customer if Call History shows no contact was made or you require directions or security gate access

2. Customer Confirmation

- Bring the SBSM when greeting the customer
  - "I understand you are having an issue with _____. Can you show me where you are having this issue?"
- Ask probing questions such as:
  - "Is the issue on all TVs or just one TV?"
  - "Is the issue constant or intermittent?"
  - "Have you recently moved/relocated the system?"

3. Initial Troubleshooting with Customer

- Attempt to recreate the problem (if possible)

At both TV1 and TV2:

- Verify all devices are plugged in and turned on
- Verify all cables are secured properly
- Verify the TV is on the correct input/channel
- If applicable, verify the smart card is inserted properly

If receiver is operational:

- Ensure the remote is programmed properly (codes, address, etc.)
- Ensure the remote and receiver are communicating properly
- Check the system info screen for errors

4. Set Up Limit Scan

- Unplug the receiver from the power outlet
- Power on the SBSM
- Set the SBSM configuration to match the dish/switch configuration
- Unhook the satellite feed from the receiver
- Attach the SBSM to the satellite feed

5. Limit Scan Behind the STB with Customer

- On the SBSM, press MENU and then press LIMIT SCAN
- Press LNB OFF soft key to cycle through orbitals
- Look for a PASS or FAIL alert

    - FAIL
      A failed limit scan will occur if:
        - At least one transponder's IRD is less than the Req
        - At least one transponder is less than -50.0 dBm

      Inform the customer:

        - "There seems to be an issue with the signal path. I will do further research tests and will let you know once the issue is resolved."

      Go to Step 6a - Signal Troubleshooting

    - PASS
      A passed limit scan will occur if:
        - All transponders' IRD is greater than the Req
        - All transponders' dBm is greater than -50.0 dBm

      This means the issue is isolated between the STB and TV.
      Inform the customer:

        - "The signal strength is good and the issue seems to be isolated to this area. I will do further tests and will let you know once the issue is resolved."

      Go to Step 6b - STB to TV Troubleshooting

6a. Signal Troubleshooting

	Step	Fail	Pass
a.	Does the wall plate have a low frequency barrel in it?	Replace and retest	Next step
b.	Limit scan at STB side of ground block/switch	Next step	Check and replace any defective components between ground block/switch and STB. Then go to (f)
c.	Limit scan at dish side of ground/block switch	Next step	Replace ground block/switch. Then go to (f)
d.	Limit scan at dish	Next step	Check and replace any defective

			components between dish and ground block/switch. Then go to (f)
e.	Verify the mount is secure and positioned properly	Secure and peak dish	Replace the LNBF, then go to (f)
f.	Repeat the limit scan behind STB	Go to (b)	Go to (g)
g.	Test outlet, plug in the receiver and run a check switch	Go to Step 6b, (a)	Go to (h)
h.	Perform a limit scan behind all other STBs. If no other STBs exist, continue to Step 7 - Final Quick Checks	Return to (a)	Go to Step 7 - Final Quick Checks

6b. STB to TV Troubleshooting

	Step	Fail	Pass
a.	Run limit scan around each component (ex. diplexer, separator or triplexer)	Replace any defective components. Reconnect components and go to (h)	Reconnect coaxial cable and go to next step *A separator/triplexer will only show odd or even transponders, which will display "fail" on SBSM
b.	Test outlet, plug in receiver and see if the TV picture is coming in clear and consistent	Go to (d)	Go to (c)
c.	Ensure TV picture contains no error message	Address error message and, if needed, replace the receiver	Go to (i)
d.	Try using the same cable in a different port on the TV	Next step	Use the same cable in the different port. Then go to (i)
e.	Try using a replacement cable	Next step	Use a replacement cable. Then go to (i)
f.	Without downgrading, try using a different kind of cable connection (ex. If HDMI, try using component cable)	Next step	Use a new cable connection. Then go to (i)
g.	Reset the TV's factory settings, with customer approval	Next step	Go to (i)
h.	Plug in another device into the same port on TV, if possible	Possible TV issue, test on another TV	Replace the receiver. Then go to (i)
i.	Perform a limit scan behind all other STBs. If no other STB, continue to Step 7 - Final Quick Checks	Go to Step 6a, (a)	Go to Step 7 - Final Quick Checks

7. Final Quick Checks

1. Dish and Mount
    - Clear line of sight
    - Secure mount and lags
    - Enough lag screws
    - Level mast
    - Ground mast
2. Cabling and Components
    - Cable RG-6 and in good condition
    - DNS approved hardware
    - All fittings secure and torqued
    - Drip loops installed properly
3. Grounding
    - Approved ground block
    - Approved ground source
    - Grounding component installed properly
4. Connectivity and Customer Education
    - Verify connectivity is present and functioning
    - Review troubleshooting findings with customer
    - Ensure customer is confident with system/remote
    - Review and quiz customer on 5 troubleshooting steps

UHF REMOTE INTERFERENCE

Overview

If an approved external device is connected to a DISH Network ViP receiver and you notice degradation in the response of the receiver to the UHF remote control, try the following steps, in the order presented, to correct the issue. After performing each step, try using the remote again to see if operation has improved.

1. Placement and Cables

Placement

External devices should not be placed on top of the receiver, as close proximity can cause UHF remote interference. Move the external device away from the receiver and the UHF remote antenna connection points.

- Increase the separation between the receiver and the external device
- Place the device on a separate shelf from the receiver
- Place the Sling Adapter flat on the rubber feet off to the side of the receiver
- Do not position an accessory so that it will block the ventilation openings on the receiver

As a general rule, the further apart you can get the attached device and the UHF antenna the better.

USB Extension Cables

Sling Adapter and External Hard Drive:

USB extension cables can increase interference if used on a Sling Adapter or an external hard drive.

- Do not use USB extension cable with these devices
    - Wi-Fi Adapter
- The USB extension cable can be used with the Wi-Fi Adapter
- One USB extension cable is included with the device

2. Change the frequency band for the UHF remote control to use UHF Pro Band B as follows:

- On a 6.3 or 6.4 remote control:
    - Remove the battery cover and slide the small switch inside the compartment to position B, changing the transmitted RF characteristics of the remote control
    - Replace the battery cover and re-link the remote with the receiver using the System Information screen
    - See the Remote Control User Guide for detailed instructions
- On a 21.0 remote:
    - Select an even numbered remote address (for example, address 2, 4 or 6), which sets this remote to Band B, and re-link the remote with the receiver using the System Information screen
    - See the Remote Control User Guide for detailed instructions
    - Note: This step does not apply to ViP211 or ViP211k receivers. It applies to the ViP612 DVR receiver only if a UHF remote control is being used

3. UHF Remote Antenna

Move the UHF antenna away from the externally connected device and the receiver using a UHF remote antenna extension cable

- Use a coaxial jumper cable to relocate the antenna
    - RG-6 or RG-59 cable
    - This jumper should be four to six feet in length
    - Use a barrel connector to attach the UHF antenna to the jumper
- You may need to try several locations for the UHF remote antenna to find one that works best in your installation
    - Route the cable and place the antenna in such a way that it is aesthetically pleasing to the customer
    - Remember when relocating the UHF antenna to be careful not to damage the customer's furnishings

4. USB Port

If an external device is connected to the USB port on the receiver's rear panel, try pluggin the device into the front panel USB port instead

- Make sure the IR sensor on the front of the receiver is not blocked

5. Customer Education

- Educate the customer on the actions you have taken to improve their remote control's operation
- Inform the customer that the interference could re-occur if the rearrange the devices

6. If none of these actions corrects the problem, refer to your manager

MoCA Systems Software Download Recovery Procedure

In the event that a Hopper installation has trouble downloading software at either the Hopper or Joey location, a few steps should be taken to recover the receiver before reauthorizing the unit. By performing the steps outlined below, technicians can help reduce the 70% No Problem Found (NPF) rate on Joeys and the 50% NPF rate on Hoppers.

Initial Steps

The first step in troubleshooting software download issues is to perform a complete end-to-end check of both the signal path and the MoCA path. A quick end-to-end check will allow technicians to verify the signal path and the MoCA path are both up to DNS standards and do not include unapproved cable runs and/or unnecessary/unapproved hardware.

This step is crucial when working in prewired homes as well as when working with prewired Joey locations where unapproved parts and damaged cable/components can be overlooked or difficult to find. Each component in the MoCA system (e.g., Hopper, Joey, HIC, etc.) must be able to communicate with one another in order to ensure a stable communication pathway (i.e., devices must "see" each other so they do not utilize overlapping frequency ranges for communication). If technicians are confident that the signal path and MoCA path are both up to DNS standards, move to the recovery steps listed below.

Joey Download Recovery

Reports from the field indicate that Joeys occasionally "freeze" during the software download — typically when the download is roughly 48% complete. In the event that technicians encounter this difficulty, the following steps can be utilized to attempt to recover the Joey and re-execute the software download.

Solution Steps

1. Power off the Joey
    a. This should be accomplished by tapping the **Power** button, but in the event it does not:
        i. Unplug the Joey for five seconds and then plug it back into the power supply
        ii. When the wizard appears, tap the **Power** button
    b. When a receiver is powered off, it will do only one of three things:
        i. Download a software update
        ii. Execute an event timer
        iii. Send status (provided it is connected to a phone or broadband connection)

The “Help Tips” screen should show briefly, and it should then transition to the “Software Update” screen for three minutes.

2. Complete the Joey setup
    a. If the wizard appears, complete the indicated steps
    b. If the wizard does not appear, manually set the resolution and program the remote
3. Program the remote to the Joey
4. If by this point the programming did not happen:
    a. Press the **SYS INFO** button on the Joey
    b. Press the **SAT** button on the remote

Hopper Download Recovery

In the rare event an installation has both satellites 119 and 61.5 on the same switch matrix, the software download may “freeze” on the Hopper with Sling during initial installation as a result of factory software that predates S060. Showroom locations and installation offices are most likely to encounter this problem, but it also occurs on rare installations that require the satellites point at both Eastern Arc (EA) and Western Arc (WA) when installing a Hopper with Sling.

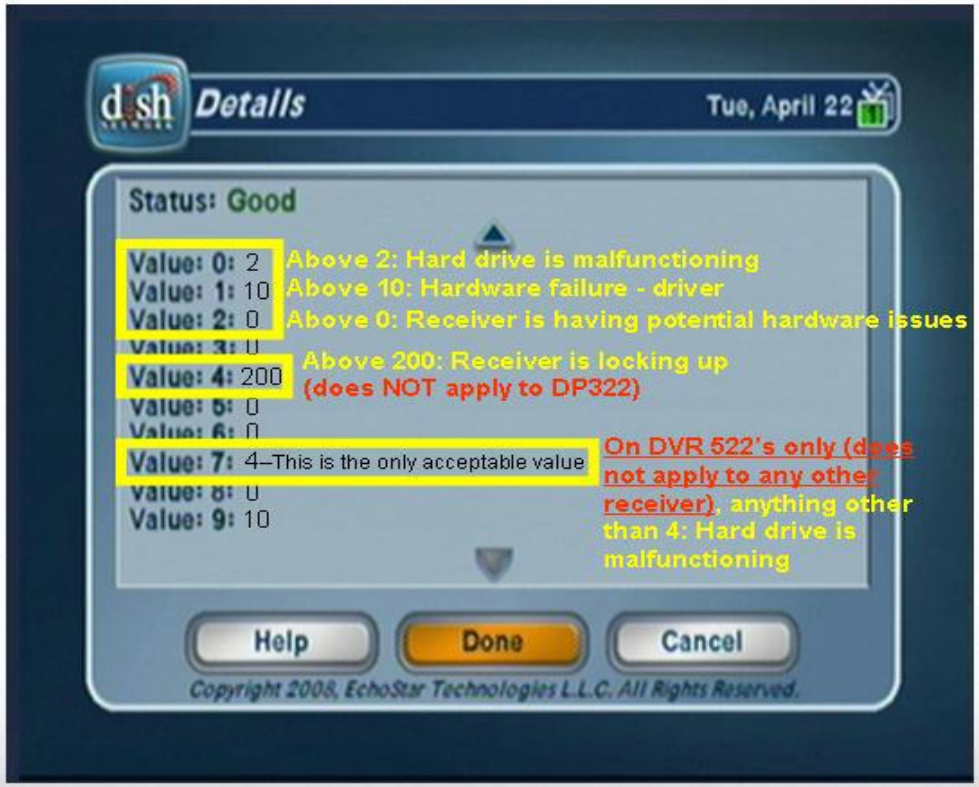
If a download was attempted on the Hopper with Sling while both 119 and 61.5 were connected but it ultimately failed, take the following actions:

1. Disconnect the Hopper with Sling from power
2. Disconnect either the 119 or 61.5 satellite feed from the DPP switch or integrated LNBF input
3. Power on the Hopper with Sling and run a check switch test
4. After the check switch test, the disconnected satellite will disappear from the switch matrix and the software will download normally
5. After the download is complete, reconnect either the 119 or 61.5 feed and run a check switch test
6. Proceed with the installation as usual

Actions

When technicians perform a new Hopper with Sling installation, if the 119 and 61.5 configurations are on the same switch matrix, they should follow the above-listed steps.

For any dual tuner & ViP tuner (including 211 & 211k), there are five values to observe on the second screen of STBHealth Lite: Values 0, 1, 2, 4, & 7 (Value 7 only applicable on DVR 522's). If any of the five values are above the threshold, RA the receiver. (Currently, the other values are for engineering use only.)


Details
Tue, April 22
Status: Good
Value: 0: 2
Value: 1: 10
Value: 2: 0
Value: 4: 200
Value: 7: 4--This is the only acceptable value
Value: 9: 10
Above 2: Hard drive is malfunctioning
Above 10: Hardware failure - driver
Above 0: Receiver is having potential hardware issues
Above 200: Receiver is locking up
(does NOT apply to DP322)
On DVR 522's only (does not apply to any other receiver), anything other than 4: Hard drive is malfunctioning
Help
Done
Cancel
Copyright 2008, EchoStar Technologies L.L.C. All Rights Reserved.

Menu 6-1-3-Details

Standardized Customer Education

All sections of Customer Education MUST be completed in the order below on every install!

1. **Hand Customer Remote**

- Show "Getting Started with Dish" guide (GSG) and reference throughout education

2. Remote Layout

- Explain remote key 1 or 2 on bottom of remote
- Point out remote sticker on back of remote
- Explain tip about SAT mode

3. Turning your TV On and Off

- **Have customer:** turn TV On and Off
- Explain screensaver that appears (receiver is off but TV still on)
- **Have customer:** turn TV back On

4. Turning your Receiver On and Off

- **Have customer:**
  - Turn the receiver On and Off
  - Turn receiver back on

  - Press GUIDE button and use PAGE DOWN button to get to 110 (Food Network)
  - Explain how PAGE UP and PAGE DOWN buttons work

8. Selecting a Favorites List to Display on Your Program Guide

- Explain Favorites Lists
- Explain 3 pre-programmed Favorites Lists
- **Have customer:**
  - Press GUIDE button to display Favorites List Options screen
  - Select All Sub favorites list
  - Select All Chan favorites list

9. Exiting On-Screen Menus

- Explain VIEW LIVE TV button
- Explain Cancel button
- **Have customer:**
  - Exit a MENU screen using the VIEW LIVE TV button
  - Exit a MENU screen using the Cancel button

5. Staying on the Correct TV Input or Channel

- Explain the importance of being on the correct input or channel
- Show the correct input or channel on the GSG and show remote sticker
  - Show what the incorrect input or channel looks like

6. Fixing a Black, Blue, or Snowy Screen

- **Have customer:**
- Get back onto correct input or channel
- Press SAT mode button to ensure the TV is in SAT mode

7. Changing Channels

- Explain the 3 ways to change channels
- **Have customer:**
  - Press 110 (Food Network) on the keypad
  - Press CHANNEL UP until on 112 (HGTV)
  - Press CHANNEL DOWN until on 110 (Food Network)
  - Press GUIDE button and use the CHANNEL UP button to get to 120 (History Channel)

Additional Tips

- Ask customer if they are interested in Parental Controls or losed captioning
- If so, program settings for them and point out in GSG where steps are located

If customer does not have a DVR, skip to Troubleshooting

1. Using your DVR while Watching Live TV

- Explain what a DVR is and show "Getting Started with your DVR" guide
- **Have customer:**
  - Press PAUSE to pause live TV
  - Press PLAY to resume watching TV
  - Press SKIP BACK to jump back 10 seconds
  - Press SKIP FWD to jump ahead 30 seconds
  - Press VIEW LIVE TV to get back to live TV

2. Recording a TV Program

- Explain that you can record a program now or in the future
- Explain the record frequency (all episodes, new episodes, once)
- **Have customer:**

- Press RECORD to record program that is currently on
- Press STOP to stop recording program
- Use GUIDE to record a program in the future (create a scheduled timer)
- Choose recording frequency

3. Watching a Recording

- **Have customer:**
- Access my recordings by pressing the DVR button
- View program that was just recorded

4. Deleting a Recorded Program

- **Have customer:**
- Access my recordings by pressing the DVR button
- Delete program that was just recorded

5. Deleting a Scheduled Timer (Future Recording)

- **Have customer:**
  - Access My Recordings by pressing the DVR button
  - Select schedule, then select timers
  - Delete scheduled timer that was just created

6. **Troubleshooting**

- Explain that 75% of all calls received for technical issues are solved with the 5 troubleshooting steps:
- **Have customer:**
  - Press the SAT mode button (**Step 1**)
  - Get the TV back on the correct input or channel (**Step 2**)
  - Change the Favorites List from one to another (**Step 3**)
  - Explain that removing objects obstructing the signal to the dish (only when safe) or waiting for a storm to pass could solve the issue (**Step 4**)
  - Explain that resetting the receiver by unplugging it from the wall for 10 seconds could solve the issue (**Step 5**)

7. Ask customer if they have any questions

8. Staying on the Correct TV Input or Channel on TV2 (or other TVs)

- Take customer to TV2 and show the correct Input or Channel on the GSG
- Show remote sticker and point out that TV2 is on a different Input or Channel than TV1
- Show what the incorrect Input or Channel looks like
- Have customer: get TV2 back to the correct Input

ViaSat: SB1 Installation

Dish Preparation

Dish Assembly

- Go back to the vehicle
- Set up a work area at the back of the vehicle
- Gather and arrange equipment
    - Antenna back bracket
    - Skew plate
    - Elevation bracket
    - Reflector
    - Sub-reflector
    - Boom arms (x2)
    - Footplate and mast
    - TRIA
- Construct the Az/El Assembly by fastening the skew plate to the front of the elevation bracket, through the
- antenna back bracket
- Use the 5/16” carriage bolts, washers, spring washers, and hex nuts
- Align the A-arrow on the skew plate to the top of the Az/El Assembly
- Set the Skew to 90
- Slide the sub-reflector feet over the ends of the boom arms that do not have notches
    - Insert a 1/4" serrated flange nut into the encapsulation cut out on the top of each sub-reflector foot
- Ensure the flange nut is between the boom arm and the top of the sub-reflector foot
- For each foot, place a 1/4" washer and spring washer onto a 1/4" hex head tap bolt
- Insert the bolt through the bottom of the sub-reflector foot into the flange nut and tighten
- Attach the boom arms to the Az/El Assembly by sliding the notched ends of the boom arms into assembly
    - From the bottom of the Az/El Assembly, insert one 1/4" hex head tap bolt into each of the four screw holes
- and tighten
- Do not damage/crush the boom arms by over-tightening the screws
- Attach the TRIA to the boom arms
    - Insert the four long Phillips head bolts into the holes in the boom arms and then through the Transceiver
- Spacers
- Align the bolts with the mounting holes on the top of the TRIA and tighten
- Ensure Feed Horn is facing the sub-reflector
- Do not damage/crush the boom arms by over-tightening the screws

- Attach the reflector to the Az/El Assembly
    - Use the 1/4" carriage bolts and serrated flange nuts
- Attach a dual ground lug to the footplate of the mast

Pre-Pointing Adjustments

- Loosen the three bolts on the bottom of the Az/El Assembly
- Align the Fine Azimuth Fine Adjust cam with the notch on the assembly
- Tighten the three bolts on the bottom of the Az/El Assembly
- Set the Elevation (reference the work order)
- Cabling Preparation
- Cut and prep the solid-copper dual messenger RG-6 cable
    - Based on the measured estimate between the dish and the ground block
    - Separate enough messenger wire to reach the dual ground lug on the
- footplate
- Connect the Transmit cable to the TX port on the TRIA
    - Torque the connection to 30-inch pounds
- Attach messenger wire to the dual ground lug on the footplate
- Prep both ends of the solid-copper dual/single messenger RG-6 jumper
    - When possible, re-use a previous jumper
- Cut the estimated length of ground wire
- Transport Materials
- Load your tool belt with mounting supplies
- Gather the solid-copper dual messenger RG-6 cable, dish assembly, ground wire, solid-copper dual/single
- messenger RG-6 jumper, mast, and solid-copper dual messenger RG-6 box
- Bring all materials to the mount site
- If a ladder is needed, make a second trip to the vehicle

Dish Installation

Dish Mount and Dish Assembly

- Follow all mounting steps for the chosen mount
    - Install the mast higher than 4 feet from the ground
    - The bottom of the reflector must be a minimum of 5 feet from the ground
- Install the required struts
    - The struts should form a triangle with the footplate on the mounting surface
    - The majority of the assembly’s weight should be positioned over the mast and not over the struts
- Attach the dish assembly to the dish mount
- Grounding and Cabling
- Fasten the solid-copper dual messenger RG-6 cable along the proposed path from the mount to the ground
- block location
    - Ensure the Transmit cable is connected to the TX port on the TRIA
    - Do not connect the Receive cable to the RX port on the TRIA
- Install a ground block

- Connect the cable and messenger wire to the ground block
- Connect the ground wire to the ground block
- Install the grounding component
- Run the ground wire to the grounding component and connect
- Run new solid-copper dual messenger RG-6 cable from the ground block to the penetration location
    - Remove the messenger wire from the cable between the ground block and the penetration location
- Drill the penetration
    - Flat cable can be used where wall penetrations are impractical or not allowed
- Equivalent to 10 feet of RG-6 cable in impedance and dBm loss
- Feed the cable through the bushing and then apply silicone
- Interior Cabling
- Install a cut-in box and a dual-wall plate
- Run interior cable to the modem
    - Remove the messenger wire from all interior cabling
- Unplug the modem from AC power
- Connect the solid-copper dual messenger RG-6 cable to the modem
    - Receive cable to the RX port on modem
    - Transmit cable to the TX port on modem
- Plug the modem into AC power
    - Wait for the LAN LED to start flashing before continuing

Point and Peak

Super Buddy Satellite Meter (SBSM) Setup

- Push the SYST soft-key
- Arrow up and select the appropriate region of the installation
- Select Other Providers from the Select Service menu
- Select Wild Blue from the Select System menu
- Choose the correct satellite from the Select LNB menu (reference the work order)
    - Anik F2
    - Wild Blue 1 (WB1)
    - AMC-15
- Ensure SWITCH TYPE is set to none
- Select DONE
- Push the ZIP soft-key
- Enter the Zip Code of the installation
- Select the EXIT soft-key
- Point Elevation and Skew
- Slightly loosen the elevation bolts in the arched slots
- Loosen the top nut on the elevation rod
- Set the inclinometer on top of the boom arm
- Adjust the bottom nut on the elevation rod until the inclinometer reading matches the boom arm angle

- (reference the work order)
    - Hand tighten the nuts on the elevation rod
- Set the Skew (reference the work order)

Point and Peak Azimuth and Elevation

- Connect a solid-copper dual/single messenger RG-6 jumper between the SBSM and the RX port on the TRIA
- Coarse-point the antenna to the highest signal level for both azimuth and elevation
    - Tighten the three collar nuts on the mast (top to bottom)
- Fine-point the antenna to the highest signal level for azimuth
    - Loosen the three bolts on the bottom of the Az/El Assembly
    - Use the Fine Azimuth Fine Adjust cam on the bottom of the Az/El
- Assembly
- Only rotate the cam clockwise (tightening motion), NEVER
- counter-clockwise
    - Tighten the three bolts on the bottom of the Az/El Assembly
- Fine-point the antenna to the highest signal level for elevation
    - Slightly loosen the elevation bolts in the arched slots
    - Loosen the top nut on the elevation rod
    - Adjust the bottom nut on the elevation rod
    - Tighten all hardware on the Az/El Assembly
- Push/Pull Test
- From behind the Az/El Assembly, gently push and pull the top, bottom, left side, and right side of the reflector
    - The signal level should drop every time pressure is applied and return when pressure is released
    - If the signal level rises, re-peak the dish
    - If the signal level does not return when pressure is released, re-point and re-peak the dish
- Remove the solid-copper dual/single messenger RG-6 jumper and SBSM from the system
- Connect the Receive cable to the RX port on the TRIA

Modem Swaps

Cabling and Modem Lock

- Shut down (power off) the computer that is connected to the existing modem
- Unplug the existing modem power supply from the power source
- Disconnect the Transmit cable from the TX port on the existing modem
- Disconnect the Receive cable from the RX port on the existing modem
- Connect the Transmit cable to the TX port on the replacement modem
- Connect the Receive cable to the RX port on the replacement modem
- Unplug the Ethernet cable from the existing modem
    - Do NOT connect the Ethernet cable to the replacement modem at this time
- Plug in the replacement modem power supply to the power source
- The replacement modem will boot up and obtain Modem Lock

- The PWR light will come on and remain solid
- The RX light will start blinking
- Modem Lock occurs when the RX light remains solid

Provisioning Replacement Modems (From the customer's computer)

- Connect the Ethernet cable to the replacement modem
- Restart (power on) the computer that is connected to the replacement modem
- Open a new Web browser
    - The Provisioning Portal should automatically load
    - If it does not, navigate to activate.wildblue.com
- On the Service Activation Welcome page, click the Click here to Continue button
- On the 1. Login page:
    - Enter the account's primary e-mail address in the User ID field (customer provided)
- If the customer cannot provide this, contact Broadband Help Desk
    - Enter the e-mail account password in the Password field (customer provided)
- If the customer cannot provide this, contact Broadband Support
    - Leave the Installer ID field blank
    - Click the Submit button
- On the 2b. Swap Modem page, click the Replace button
- When the 3 of 3. Reset Modem page displays, the modem will automatically reboot
- After the modem reboots, it will obtain Modem Lock
- Restart the computer once the modem obtains Modem Lock
- After the computer restart, the Web browser should open the default home page

ViaSat: SB2 Installation

Preparation

• Perform all pre-arrival and arrival tasks described in the IJA

- Gather materials
  - SB2 modem
  - Wireless router (temporarily provided by the technician)
  - Mobile device
  - Receptacle tester
- Perform the customer confirmation tasks described in the IJA
  - Confirm dishNET package

Indoor Site Survey

- Identify the modem location
  - Test outlet with receptacle tester
- May require the customer to shut down the computer
- Restart the computer after the receptacle test
- Plug the modem and router into AC power
- Identify potential cable routes and a penetration location
  - This provides time for the modem and router to boot up
- Connect the wireless router to the modem
- Using the mobile device:
  - Turn on Wi-Fi detection
  - Connect to the wireless network
- May require turning off mobile data (3G/4G)
  - Using a Web browser, verify access to the Modem Browser Interface (192.168.100.1/install)

Exterior Site Survey

- Determine grounding option(s)
- Determine Line of Sight
- Determine mount location
- Determine mount type
  - Direct to Wall
  - Direct to Brick
  - Direct to Overhang
  - Non-Pen
- If it's a temporary mount solution, it can be
- installed at ground level
- Use the same ballast requirements as with 500+/1000+ dishes (9 cap blocks)
  - Pole
- Requires the use of the Pole Adapter
  - Direct to Roof (requires management approval)
- Determine cable route

    - Must be fewer than 150 ft.
    - Must exceed 25 ft.
- Measure/estimate the solid-copper single messenger RG-6 coaxial cable needed
- Measure/estimate the ground wire needed (from the ground block to the ground source)
    - Must be fewer than 20 ft.

Pre-Install Customer Walk Through

Inside

- Inform the customer of the modem's placement with proper ventilation, cable route, and penetration

Outside

- Inform the customer of the mount location, cable route, and penetration
- Gain approval and estimate job duration

Dish Preparation

Dish Assembly

- Return to the vehicle
- Set up a work area at the back of the vehicle
- Gather and arrange equipment
    - Antenna back bracket
    - Skew plate
    - Elevation bracket
    - Reflector
    - Boom arms (x2)
    - Footplate and mast
    - TRIA and TRIA bracket
- Construct the Az/El Assembly by fastening the skew plate to the front
- of the elevation bracket, through the antenna back bracket
    - Use the short carriage bolts, washers, spring washers, and hex nuts
    - Align the A-arrow on the skew plate to the top of the Az/El Assembly
    - Set the Skew to 90
- Attach the reflector to the Az/El Assembly
    - Use the short carriage bolts and serrated flange nuts
- Attach the boom arms to the Az/El Assembly
    - Use the short bolts and washers
- Attach the TRIA bracket to the boom arms
    - Use the long carriage bolts, washers, spring washers, and hex nuts
- Attach the TRIA to the TRIA bracket
    - Use the small bolts and small spring washers
- Attach a dual ground lug to the footplate of the mast
    - Scrape the paint if necessary

Pre-Pointing Adjustments

- Loosen the three bolts on the bottom of the Az/El Assembly
    - Do not loosen the two bolts on the back of the Az/El Assembly, they support

- the fine Azimuth adjustment mechanism
- Turn the Fine Azimuth adjustment nut until the front
- right bolt is centered in the slot
- Tighten the three bolts on the bottom of the Az/El

Assembly

- Set the Elevation (reference the work order)
- Cabling Preparation
- Cut and prep the solid-copper single messenger RG-6 cable
    - Based on the measured estimate between the dish and the ground block
    - Ensure there's enough length for the 6-inch service loop at the Az/El Assembly
    - Separate enough messenger wire to reach the dual ground lug on the footplate
- Connect the cable to the TX port on the TRIA
    - Torque the connection to 30-inch pounds
    - Place a 75-ohm terminator on the RX port on the TRIA
    - Fasten the solid-copper single messenger RG-6 cable to a boom arm (Zip ties)
- Attach messenger wire to the dual ground lug on the footplate
- Cut the estimated length of ground wire
- Transport Materials
- Load your tool belt with mounting supplies
- Gather the solid-copper single messenger RG-6 cable, dish assembly, ground wire, mast, and solid-copper single
- messenger RG-6 box
- Bring all materials to the mount site
- If a ladder is needed, make a second trip to the vehicle

Dish Installation

Dish Mount and Dish Assembly

- Follow all mounting steps for the chosen mount
    - Install the mast greater than 4 feet above the ground
    - The bottom of the reflector must be a minimum of 5 feet above the ground
- Install the required struts
    - The struts should form a triangle with the footplate on the mounting surface
    - The majority of the assembly's weight should be positioned over the mast — not over the struts
- Attach the dish assembly to the dish mount
    - Ensure the Azimuth is not pointed near the orbital location

Grounding and Cabling

- Fasten the solid-copper single messenger RG-6 cable along the proposed path from the mount to the ground
- block location
    - Create a 6-inch service loop at the Az/El Assembly
- Install a ground block
- Connect the cable and messenger wire to the ground block
- Connect the ground wire to the ground block

- Install the grounding component
- Run the ground wire to the grounding component and connect
- Run new solid-copper single messenger RG-6 cable from the ground block to the penetration location
    - Remove the messenger wire from the cable between the ground block and the penetration location
- Drill the penetration
    - Flat cable can be used where wall penetrations are impractical or not allowed
- Equivalent to 10 feet of RG-6 cable in impedance and dBm loss
- Feed the cable through the bushing and then apply silicone
- Interior Cabling
- Install a cut-in box and a single-wall plate
- Run interior cable to the modem
    - Remove the messenger wire from all interior cabling
- Unplug the modem from AC power
- Connect the solid-copper single messenger RG-6 cable to the modem
- Plug the modem into AC power
    - Wait for the LAN LED to start flashing before continuing

Point and Peak

Modem Browser Interface (done from the mobile device within range of the wireless network)

- Using a Web browser, navigate to 192.168.100.1/install
- On the Installation Configuration screen, enter the 16-digit Modem Key (reference the work order)
- Tap the large forward arrow in the lower-right corner of the screen
    - Do NOT press Enter, as this makes the modem exit the Installation mode
- The Installation Configuration screen changes
    - The RX and LAN LEDs on the modem should be flashing
    - The TRIA should be emitting the “heartbeat” tone
- Point Elevation and Skew
- Slightly loosen the elevation bolts in the arched slots
- Loosen the top nut on the elevation rod
- Place the inclinometer bracket over the boom arms
- Set the inclinometer on top of the inclinometer bracket
- Adjust the bottom nut on the elevation rod until the inclinometer reading matches the boom arm angle
- (reference the work order)
    - The boom arm angle can be determined by subtracting 19.4 from the elevation
- Set the Skew (reference the work order)

Point Azimuth

- Ensure the dish is NOT pointed at the orbital location (TRIA is emitting the “heartbeat” tone)
- Sweep the dish toward the orbital location until the TRIA emits the “ring-ring” tone
    - The “ring-ring” tone will be immediately followed by a single beep

- This single beep indicates the correct satellite was found
    - The single beep will be immediately followed by the “low/slow” tone
- Continue to sweep in the same direction until the TRIA emits the “heartbeat” tone
    - The following pattern of tones indicates the dish is being swept through the satellite signal:
- Low/slow
- High/fast (only heard if the sweep is done slowly)
- High/steady
- High/fast (only heard if the sweep is done slowly)
- Low/slow
- Heartbeat
    - This completes the first sweep (of the three required) to lock the modem into the beam
- Sweeping in the opposite direction, the following pattern of tones indicates the second sweep (of the three
- required) is complete
    - Ring-ring (followed by a single beep)
    - Low/slow
    - High/fast (only heard if the sweep is done slowly)
    - High/steady
    - High/fast (only heard if the sweep is done slowly)
    - Low/slow
    - Heartbeat
- Reverse the sweep until the TRIA continually emits the “high/steady” tone
    - This completes the third required sweep
- Tighten the three collar nuts on the mast (top to bottom)
    - If the “high/steady” tone is lost, adjust the bottom nut on the elevation rod to
- regain the “high/steady” tone
- Peak Azimuth
- Loosen the three bolts on the bottom of the Az/El Assembly
    - Do not loosen the two bolts on the back of the Az/El Assembly, they support
- the fine Azimuth adjustment mechanism
- Using the Fine Azimuth adjustment nut, sweep the dish in one direction until the
- TRIA emits the “low/slow” tone
    - The tone will cycle from “high/steady” to “high/fast” to “low/slow”
- Using the Fine Azimuth adjustment nut, sweep the dish in the opposite direction until the
- TRIA emits the “low/slow” tone
    - The tone will cycle from “low/slow” to “high/fast” to “high/steady” to “high/fast” to “low/slow”
- Using the Fine Azimuth adjustment nut, reverse the sweep until the TRIA continually
- emits the “high/steady” tone
    - The tone will cycle from “low/slow” to “high/fast” to “high/steady”

- Tighten the three bolts on the bottom of the Az/El Assembly
    - If the “high/steady” tone is lost, re-peak the Azimuth

Peak Elevation

- Using the bottom nut on the elevation rod, sweep the dish in one direction until the TRIA emits the “low/slow”
- tone
    - The tone will cycle from “high/steady” to “high/fast” to “low/slow”
- Using the bottom nut on the elevation rod, sweep the dish in the opposite direction until the TRIA emits the
- “low/slow” tone
    - The tone will cycle from “low/slow” to “high/fast” to “high/steady” to “high/fast” to “low/slow”
- Using the bottom nut on the elevation rod, reverse the sweep until the TRIA continually
- emits the ‘high/steady’ tone
    - The tone will cycle from “low/slow” to “high/fast” to “high/steady”
- Tighten all hardware on the Az/El Assembly
    - If the “high/steady” tone is lost, re-peak the Elevation
- Push/Pull Test
- From behind the Az/El Assembly, gently push and pull the top, bottom, left side, and right side of the reflector
    - The “high/steady” tone should drop every time pressure is applied and return when pressure is released
    - If the tone rises, re-peak the dish
    - If the “high/steady” tone does not return when pressure is released, re-point and re-peak the dish
- Modem Lock – (done near the modem location)
- In the MBI, confirm that a green checkmark appears in the last box
    - If no, return to the antenna and do the Push/Pull Test
- Click the large forward arrow in the lower-right corner of the screen
- Watch the modem LEDs
    - Modem Lock occurs when all four LEDs are solid
    - This is a momentary display of the LEDs and is easy to miss
- Point-and-Peak Reset (if necessary)
- If you need to restart the point-and-peak process:
    - Block the TRIA for 20 seconds
- Hold the inclinometer bracket against the Feed Horn to do this
    - Ensure dish is NOT pointed at the orbital location

Provisioning (from the mobile device)

- Restart the SB2 modem
- Open a new Web browser
- The Provisioning Portal should load automatically
- If it does not, navigate to 192.168.100.1/install
- Enter the Customer Code and tap Continue (reference the work order)

- On the Customer Confirmation screen, enter your Installer ID and tap Confirm
- The Quality Of Install (QOI) page displays
    - The QOI test can take up to one minute to complete
    - When the QOI test completes:
- If QOI passes, tap Next
- If QOI fails, fix anything indicated and run QOI again by tapping Run QOI
    - If QOI is unavailable, advance provisioning by tapping Continue
- The Service Activated page displays
    - The modem will reboot automatically
    - Verify that the modem resumes normal operation
- Navigate to the www.mydish.com landing page
- Check the SVT tab of the Support Portal to ensure a quality installation
- Show the customer the www.mydish.com landing page using your mobile device
- to demonstrate Internet connectivity
- Disconnect the wireless router
- Connect the SB2 modem directly to the customer's computer
- Explain the completed work to the customer
- Allow the customer to access the Internet briefly from their computer
    - Refer the customer to their PC support if their computer does not access the Internet
    - Since you verified Internet access from your mobile device, if the customer's computer
- will not connect, the issue is with the computer and not the modem
- Return materials to the vehicle
- Get the vacuum

Finalize Appointment

- Clean up any mess using the vacuum
- Enter work notes and/or paperwork
- Have the customer sign the agreement(s)
- Thank the customer
- Ensure you have all your tools and equipment:
    - Vacuum
    - Wireless router
- Return to the vehicle
- Update the appointment status to Complete
- Depart

Jupiter Installation

Job Aid

Preparation

- Perform all pre-arrival and arrival tasks described in the IJA
- Gather materials
    - Jupiter modem
    - Wireless router (temporarily provided by technician)
    - Mobile device
    - Receptacle tester
- Perform the customer confirmation tasks described in the IJA
    - Confirm dishNET package

Indoor Site Survey

- Identify the modem location
    - Test outlet with receptacle tester
- May require the customer to shut down the computer
- Restart the computer after receptacle test
- Plug the modem and router into AC power
- Identify potential cable routes and penetration location
    - Provides time for the modem and router to boot up
- Connect wireless router to the modem
- Using the mobile device
    - Turn on Wi-Fi detection
    - Connect to the wireless network
- May require turning off mobile data (3G/4G)
    - Using a Web browser, verify access to Hughes System Control Center (192.168.0.1)

Exterior Site Survey

- Determine grounding option(s)
- Determine line of sight
- Determine mount location
- Determine mount type
    - Direct to Wall
    - Direct to Brick
    - Direct to Overhang
    - Non-Pen
- If temporary mount solution, can be installed at ground level
- Same ballast requirements as 500+/1000+ dishes (9 cap blocks)

    - Pole
- Requires the use of the Pole Adapter
    - Direct to Roof – Requires management approval
- Use the GPS app on your mobile device to get Lat/Long coordinates at the mount location
    - Note these coordinates (used later in HSCC)
- Determine cable route
- Measure/estimate the solid copper single messenger RG-6 coaxial cable needed
    - This is the permanent cable path from the TRIA to the ground block
- Measure/estimate solid copper single messenger RG-6 jumper needed
    - This is the shortest distance between the TRIA and the ground block
- Measure/estimate the ground wire needed (from ground block to ground source)
    - Must be fewer than 20 ft.

Pre-Install Customer Walk Through

Inside

- Inform the customer of modem placement with proper ventilation, cable route, and penetration

Outside

- Inform the customer of mount location, cable route, and penetration
- Gain approval and estimate job length

Dish Preparation

Hughes System Control Center (HSCC) – (done from the mobile device within range of the wireless network)

- Using a Web browser, navigate to 192.168.0.1
- Click on the “i” icon in the upper right of the screen
- Expand Installation and then click Install
- Enter the Lat/Long coordinates obtained at the mount location
- Select EchoStar-XVII from the Satellite drop-down menu and click Submit
- Note the Azimuth, Elevation, Tilt Angle (skew), and polarization settings
    - If a negative Tilt Angle is listed, subtract it from 90 and use the resulting number for the skew setting
- Example: Tilt Angle: -12
- 90 - 12 = 78 (set skew to 78)
    - If a positive Tilt Angle is listed, add it to 90 and use the resulting number for the skew setting
- Example: Tilt Angle: 12
- 90 + 12 = 102 (set skew to 102)

Dish Assembly

- Go back to the vehicle
- Set up a work area at the back of the vehicle
- Gather and arrange equipment

    - Az/El Assembly
    - DishNET reflector
    - Boom arm
    - TRIA and TRIA bracket
- Adjust azimuth, elevation, and skew on Az/El Assembly
- Attach Az/El Assembly to reflector
- Attach boom arm to Az/El Assembly
    - Ensure either the signal absorption tape OR V-channel is facing up
- TRIA Assembly
- Secure the Feed Horn to the LNB
    - Set the polarity by aligning the R or L engravings with the arrow engravings
    - Ensure the O-ring is properly seated
- Cut the solid copper single messenger RG-6 cable
    - Based on the measured estimate between the dish and the ground block
- Prep one end of the solid copper single messenger RG-6 cable
    - Separate enough messenger wire to reach the ground screw
- Feed the solid copper single RG-6 cable through the boom arm
- Attach the TRIA bracket to the boom arm
- Attach the TRIA to the TRIA bracket
- Connect the cable to the TRIA
    - Torque the connection to 30-inch pounds
- Attach messenger wire to the ground screw on the Az/El Assembly
- Prep both ends of the solid copper single messenger RG-6 jumper (based on the measured estimate)
    - When possible, re-use a previous jumper
- Cut the estimated length of ground wire
- Transport Materials
- Load your tool belt with mounting supplies
- Gather the DAPT 2, solid copper single messenger RG-6 jumper, dish assembly, ground wire,
- mast, and solid copper single messenger RG-6 box
- Bring all materials to the mount site
- If a ladder is needed, make a second trip to the vehicle

Dish Installation

Dish Mount and Dish Assembly

- Follow all mounting steps for the chosen mount
    - Install the mast higher than 4 feet from the ground
    - The bottom of the reflector must be a minimum of 5 feet from the ground
- Install the required struts
    - The struts should form a triangle with the footplate on the mounting surface
    - The majority of the assembly's weight should be positioned over the mast and not over the struts

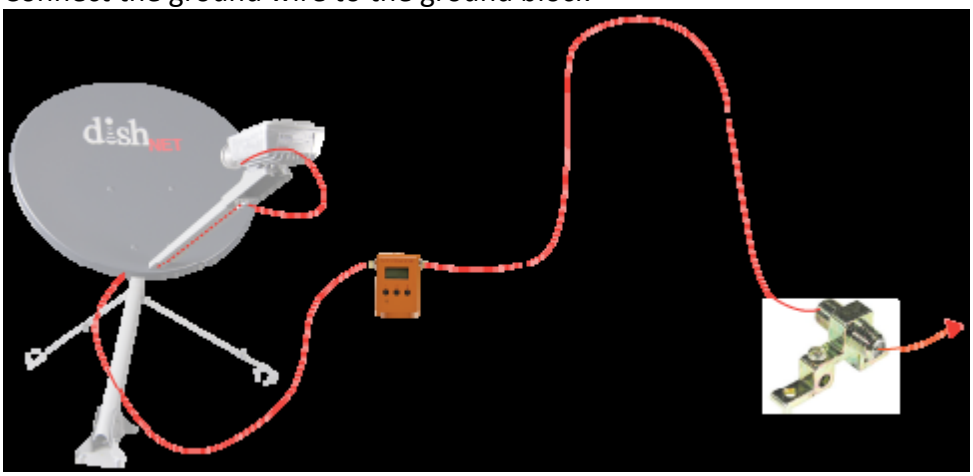
- Attach the dish assembly to the dish mount

Cabling

- Place the solid copper single messenger RG-6 cable along the proposed path from the mount to the ground
- block location
    - Do not fasten the cable to the home at this time
    - Length CANNOT exceed 150 feet
    - Length MUST exceed 25 feet
- Prep the other end of the solid copper single messenger RG-6 cable
    - If necessary, cut to the appropriate length
- Install a ground block

DAPT 2 Setup

- Attach the solid copper single messenger RG-6 cable from the TRIA to the LNB port on the DAPT 2
- Attach the jumper between the IDU port on the DAPT 2 and the ground block
- Grounding and Cabling
- Connect the ground wire to the ground block



- Install the grounding component
- Run the ground wire to the grounding component and connect
- Run the new solid copper single messenger RG-6 cable from the ground block to the penetration location
    - Remove the messenger wire from the cable between the ground block and the penetration location
- Drill penetration
    - Flat cable can be used where wall penetrations are impractical or not allowed
- Equivalent to 10 feet of RG-6 cable in impedance and dBm loss
- Feed cable through bushing and apply silicone

Interior Cabling

- Install a cut-in box and a single-wall plate
- Run interior cables to the modem

    - Remove the messenger wire from all interior cabling
- Unplug the modem from AC power
- Connect the solid copper single messenger RG-6 cable to the modem
- Jumper
- Plug the modem into AC power

Pointing and Peaking

- Go outside to the DAPT 2 location
- Ensure HSCC displays the Pointing screen – (from the mobile device)
- Verify the DAPT 2 is correctly inline on the cable
- Take the DAPT 2 to the mount location
    - Be cautious of unfastened cables
    - Do not damage unfastened cables
- DAPT 2 displays voltage (48 VDC), press Advance (3)
- DAPT 2 displays software version, COMM Startup, Logging VoltMeas,
- followed by Logging Done, press Advance (3)
- Coarse-point the antenna to the highest SQF for both azimuth and elevation
    - The number on the left is the highest SQF achieved
    - The number on the right is the current SQF being received
    - If the current SQF reading won't settle on a value, use the Toggle button (2)
- to smooth out the atmospheric effects on SQF
- Fine-point the antenna to the highest SQF for both azimuth and elevation
    - Tighten the coarse pointing bolts
    - Use the fine adjustment azimuth and elevation bolts and nuts to peak the dish
- Lock down all azimuth and elevation bolts and nuts
- Press Advance (3) to display STORE Results
- Press Advance (3) to display StoreYes Adv=Yes
- Press Advance (3) to display Pointing Exit
- Press Toggle (2) to exit pointing
- From the HSCC, click Next
    - Wait for Ranging, Registration, Associating with Network, and Configuration to complete
    - "Onsite Validation Tool" and "Terminal Activation" links will appear
- Finalize Cable Route
- While waiting, fasten the permanent cable between the dish and ground block to the home
- Leave the DAPT 2 and the jumper installed

Provisioning (from mobile device)

- Click the "Terminal Activation" link
- Enter the SAN and PIN (reference the work order)
- Click Continue
- Click Confirm
- Wait for the "Terminal Activation Successful" screen to display
- Open a new Web browser and navigate to the HSCC (192.168.0.1)

- Click the “Service_Activation” link on the left side of the screen
- Wait for the “Your satellite internet service has been activated” message to appear
- Open a new Web browser and navigate to the www.mydish.com landing page
- Return materials to the vehicle
- Get the vacuum

Finalize Appointment

- Go to the modem location
- Unplug the modem from AC power
- Clean up any mess using the vacuum
- Go to the ground block location
    - Remove the DAPT 2 and jumper cable from the system
    - Connect the solid copper single messenger RG-6 cable to the ground block
    - Connect the messenger wire to the ground block
    - Torque the connections to 30-inch pounds
- Go to the modem location
- Plug the modem into AC power
- Enter work notes and/or paperwork
- Show the customer the www.mydish.com landing page using your mobile device
- to demonstrate Internet connectivity
- Disconnect the wireless router
- Connect the Jupiter modem directly to the customer’s computer
- Explain the work completed to the customer
- Allow the customer to access the Internet briefly from their computer
    - Refer the customer to their PC support if their computer does not access the Internet
    - Since you verified Internet access from the mobile device, if the customer’s computer
- will not connect, the issue is with the computer and not the modem
- Have the customer sign agreement(s)
- Thank the customer
- Ensure you have all your tools and equipment:
    - Vacuum
    - Wireless router
    - DAPT 2
    - Jumper
- Go back to the vehicle
- Update the appointment status to Complete
- Depart

dishNET: Installation Tips

Overview

Since the launch of dishNET on 10/01/12, we have identified several installation tips from technician feedback and analysis when completing dishNET installations.

- dishNET ETAdirect Procedures for All Services
- Latitude & Longitude Coordinates for Hughes
- Calculating Elevation and Skew for All Services
- TRIA Polarity for Hughes
- Pointing and Peaking ViaSat SurfBeam 2
- Key Areas of Focus for All Services
- Two-Step Jupiter Provisioning Process

Why It's Important

Some issues have been identified that have negatively impacted dishNET completions, customer experience, and work order completions. We are sharing various pitfalls to avoid and installation tips that assist in addressing these issues.

Installation Tips

dishNET ETAdirect Procedures for All Services

Issue: Closing a work order in CSG is not the same as completing an appointment in ETAdirect. CSG requires accurate dishNET equipment information from ETAdirect to properly close work orders. ETAdirect allows the completion of appointments even if the dishNET equipment was added incorrectly.

Impact: Multiple dishNET work orders are failing to close in CSG.
This means:

- The work order will remain open and will not be credited as a completed job
- Technician and office PPH and completion rates will be negatively impacted
- Billing will not be correct, resulting in service interruptions and unnecessary truck rolls

Procedure: If you receive the following message while activating equipment in ETAdirect:

Activate equipment
Equipment activation failed. Please check equipment info and re-attempt via mobility device.
MW Error or CSG error
Cancel

Tap Cancel and verify:

• Equipment and services match

- Correct: ViaSat equipment on ViaSat installations
    - Incorrect: ViaSat equipment on Hughes installations or vise-versa
    - Correct serial numbers were entered
- Do NOT use DISH serial numbers for Hughes or ViaSat installations
    - Serial numbers were entered correctly

- Serial numbers were entered correctly
    - Using the letter “O” instead of zeros or vise-versa
- Serial numbers on Hughes modems may contain both zeros and the letter “O”
- Serial numbers on all other dishNET equipment can contain zeros, but not the letter “O”
    - Quantity is always set to one (1)

Remember, there are three different processes to correctly add equipment to appointments.

1. Automatic
    - Use this process as the primary method to add equipment to appointments
2. Manual
    - Use this process when the automatic process is not available or failed, for example:
        - The serial numbers are not listed in the Equipment tab
            - Equipment must be added to vehicle inventory by 2:00 a.m. to show in the Equipment tab
    - Assigned the appointment after leaving the office and equipment delivery is required
3. DASH
    - Use this process when you are out of connectivity range

Latitude & Longitude Coordinates for Hughes

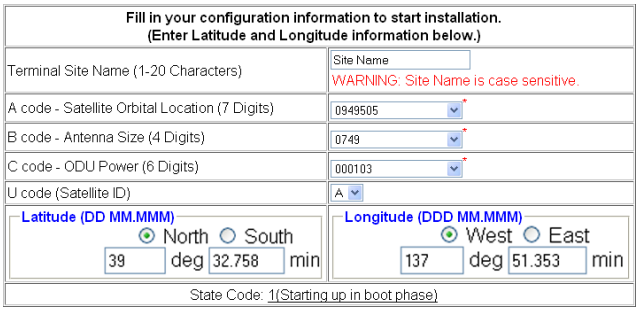
Issue: A GPS must be used to determine the exact latitude and longitude coordinates for Hughes antenna mounting locations. When the wrong GPS format is used and entered into the HSCC (Hughes System Control Center) incorrect azimuth, elevation, and skew are displayed.

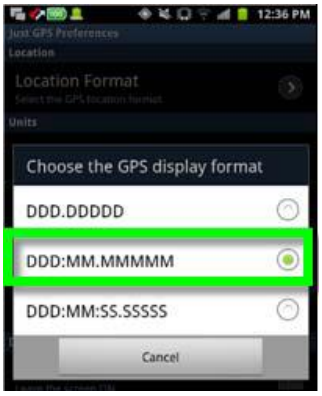
Impact: Using the incorrect GPS format results in increased installation time and incorrect installation parameters.

Procedure:

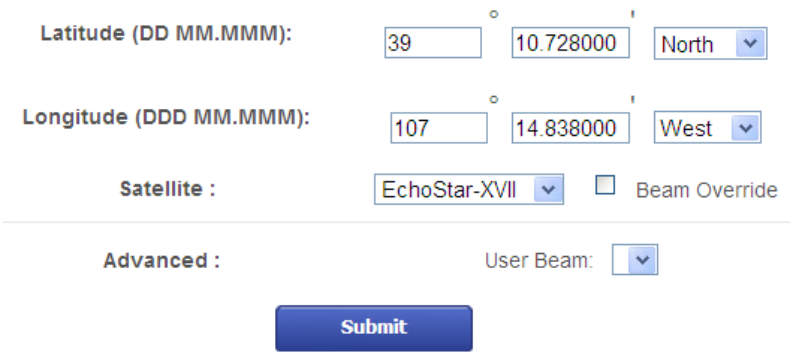
- The required GPS (Lat/Long Coordinates) information for Jupiter and SpaceWay must be displayed in degrees, minutes, and fractional minutes
- Fractional minutes must display to three significant digits
- Required HSCC format: DDD:MM.MMM or N 39° 32.758' W 77° 51.353'
- If you mistakenly use the wrong GPS format [e.g. DDD.DDDDD or DDD:MM:SSSSSS], you will get incorrect installation parameters from the HSCC for the location you are actually installing

SpaceWay HSCC


Fill in your configuration information to start installation.
(Enter Latitude and Longitude information below.)
Terminal Site Name (1-20 Characters)
Site Name
WARNING: Site Name is case sensitive.
A code - Satellite Orbital Location (7 Digits)
0949505
B code - Antenna Size (4 Digits)
0749
C code - ODU Power (6 Digits)
000103
U code (Satellite ID)
A
Latitude (DD MM.MMM)
North South
39 deg 32.758 min
Longitude (DD MM.MMM)
West East
137 deg 51.353 min
State Code: 1(Starting up in boot phase)



Jupiter HSCC



Calculating Elevation and Skew for All Services

Issue: The method of calculating elevation and skew settings vary by system, and in several instances technicians are not matching the correct procedure to the system they are installing.

Impact: Not setting the elevation and/or skew correctly has various consequences, including:

- Not being able to locate the satellite signal
- Poor signal quality
- This can result in the system drawing excessive bandwidth, depleting the signal strength for other customers supported by the same beam
  - Poor customer experience
  - Trouble Calls

Procedure:

- SurfBeam 2 (Universal dish assembly)
    - Boom arm angle can be determined by subtracting 21.2 from the elevation listed on the work order
    - Skew can be determine by subtracting the skew listed on the work order from 180
- SurfBeam 2 (Proprietary dish assembly)
    - Boom arm angle can be determined by subtracting 19.4 from the elevation listed on the work order
    - Use the skew listed on the work order
- Jupiter & SpaceWay
    - If a negative Tilt Angle is listed in the HSCC, subtract it from 90 and use the resulting number for the skew setting
- If a positive Tilt Angle is listed in the HSCC, add it to 90 and use the resulting number for the skew setting
    - This is a clockwise rotation of the skew plate

TRIA Polarity for Hughes

Issue: TRIAs for both Jupiter and SpaceWay require manual adjustment to set the correct right or left hand polarity. In many cases technicians are skipping and/or forgetting this step.

Impact: If the TRIA polarity is not set correctly, it will negatively affect point and peak procedures, the system SQF (Signal Quality Factor) and generate Trouble Calls.
Example: Tilt Angle: –12
90 – 12 = 78 (Set skew to 78)
Example: Tilt Angle: 12
90 + 12 = 102 (Set skew to 102)

Procedure:

- TRIA polarity on Jupiter and SpaceWay systems must be manually set at the time of installation
    - SurfBeam 2 does not have a manual TRIA polarity setting

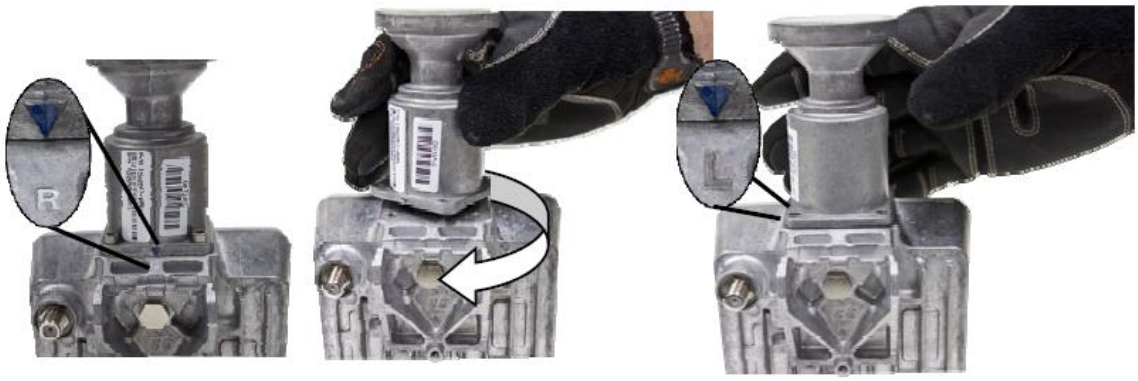
Pointing and Peaking ViaSat SurfBeam 2 (SB2)

Issue: SurfBeam 2 systems require the use of the three-sweep procedure to successfully program the modem and achieve signal lock.

Impact: It is vital to follow the directed procedures to point and peak SurfBeam 2 systems. There have been several instances where technicians didn't follow the procedure and when shortened and/or skipped it can result in various consequences, including:

- Not locating the satellite
- False modem and TRIA programming
- Poor signal quality
- This can result in the system drawing excessive bandwidth, depleting the signal strength for other customers
- supported by the same beam
- Poor customer experience
- Trouble Calls

Changing Jupiter TRIA Polarity



Procedure:

- You MUST sweep SurfBeam 2 dishes three times each for Point Azimuth, Peak Azimuth, and Peak Elevation during the point and peak process
    - This is the ONLY way SurfBeam 2 modems learn their frequency set
    - 1st sweep locates the correct satellite and locks modem into the beam
    - Tones heard during 1st sweep:
        - Heartbeat
        - Ring-ring (followed by a single beep)
        - Low/slow
        - High/fast (only heard if the sweep is done slowly)
        - High/steady
        - High/fast (only heard if the sweep is done slowly)
        - Low/slow
        - Heartbeat
    - 2nd sweep locates the width and center of the beam

- Tones heard during 2nd sweep:
    - Heartbeat
    - Low/slow
    - High/fast (only heard if the sweep is done slowly)
    - High/steady
    - High/fast (only heard if the sweep is done slowly)
    - Low/slow
    - Heartbeat
- 3rd and final sweep achieves signal lock
- Tones heard during 3rd sweep:
    - Heartbeat
    - Ring-ring (followed by a single beep)
    - Low/slow
    - High/fast (only heard if the sweep is done slowly)
    - High/steady

Key Areas of Focus for Pointing and Peaking for All Services

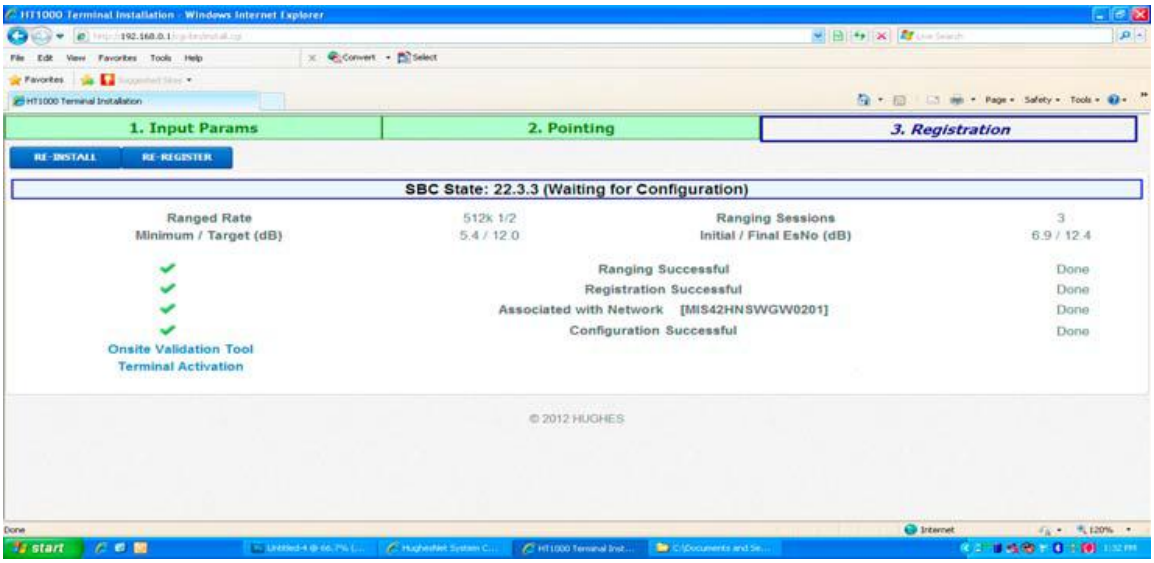
- **SurfBeam 2**
    - Extremely reliant on accurate boom arm angle adjustments to effectively start pointing
    - SurfBeam 2 is very sensitive to fine-elevation adjustments
- **Jupiter and SpaceWay**
    - Hughes systems are very sensitive to fine-azimuth adjustments

Two-Step Jupiter Provisioning Process

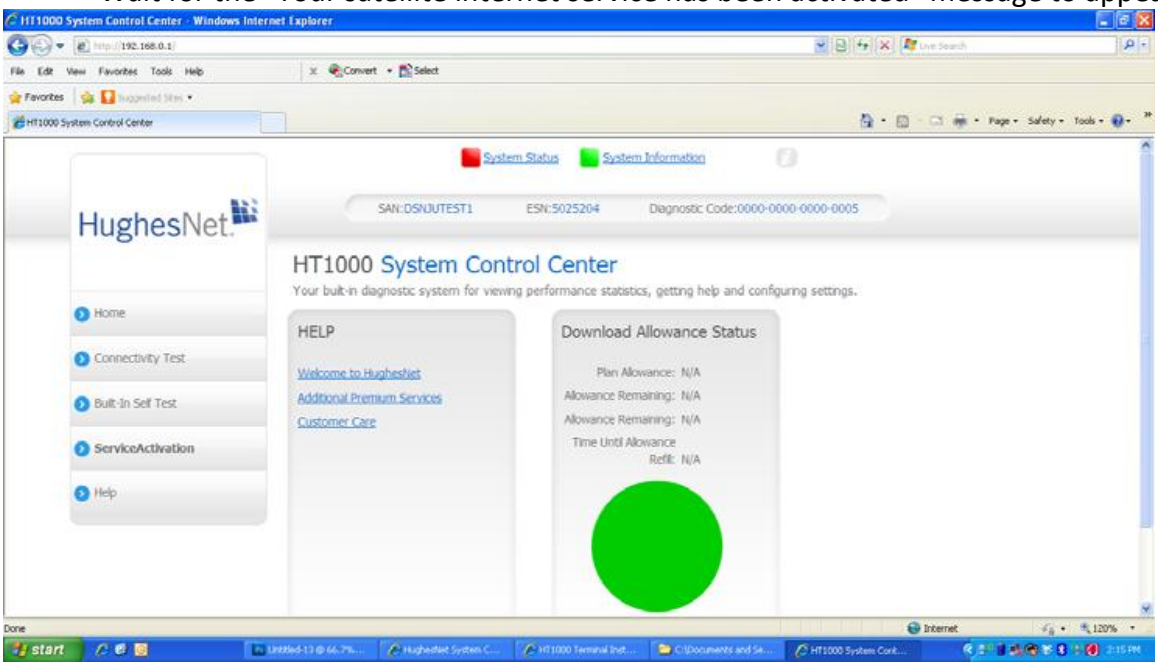
Issue: To provision a Jupiter modem you must complete "Terminal Activation" and then "Service Activation". A number of technicians are skipping step two (Service Activation) because they forget to open a new browser after Terminal Activation.

Impact: When technicians skip step two, "Service Activation" will not be accomplished. This will prevent the customer’s modem from being tied to a DISH account, thus not granting access to the Internet service and generating Trouble Calls.

Procedure:
• Step 1: Click the "Terminal Activation" link
- Wait for the "Terminal Activation Successful" screen to display
- This is after entering the SAN and PIN



- Step 2: Click the "Service Activation" link in a new browser
  - Wait for the "Your satellite internet service has been activated" message to appear



Related Information

All of this information is covered in the dishNET training aids, which are located on DNS Portal: Home >> Tech Corner >> Installation >> Install >> dishNET.

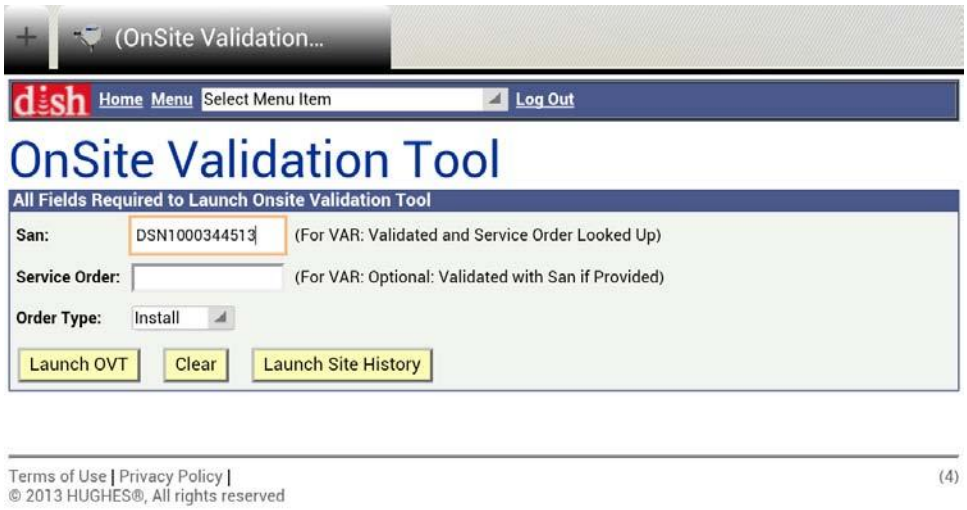
Onsite Validation Tool (OVT)

Use OVT on all HughesNet service calls and after service activation on new installations, before closing the work order.

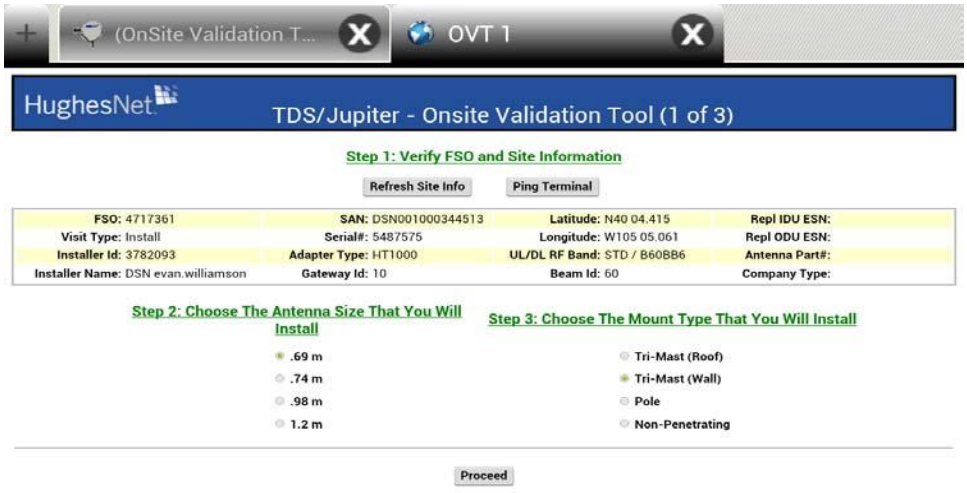
1. From the mobility device, access OVT (https://dwayinstalls.hns.com)
2. Place a checkmark in the Mobile Dev box
3. Select “Medium (600-1000) Tablet” from the Screen Size drop-down
4. Select “DISH” from the Auth System drop-down
5. Enter your ETAdirect User Name and Password

6. Tap Log In
7. In the Quick Actions pane, tap “OnSite Validation Tool”

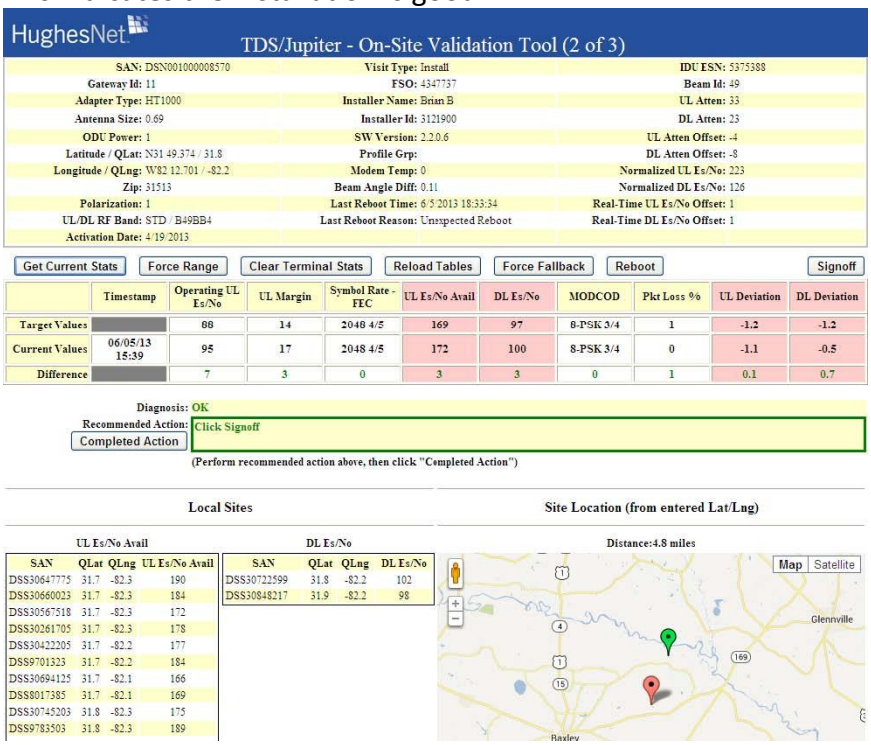
8. Enter the SAN and tap Launch OVT (Reference Appt Info in ETAdirect)
9. Tap Launch OVT


(OnSite Validation...
dish
Home Menu Select Menu Item Log Out
OnSite Validation Tool
All Fields Required to Launch Onsite Validation Tool
San: DSN1000344513 (For VAR: Validated and Service Order Looked Up)
Service Order: (For VAR: Optional: Validated with San if Provided)
Order Type: Install
Launch OVT Clear Launch Site History
Terms of Use | Privacy Policy |
© 2013 HUGHES®, All rights reserved
(4)

10. Select the .69 m radio button
11. Select the mount type used on the installation
12. Tap Proceed

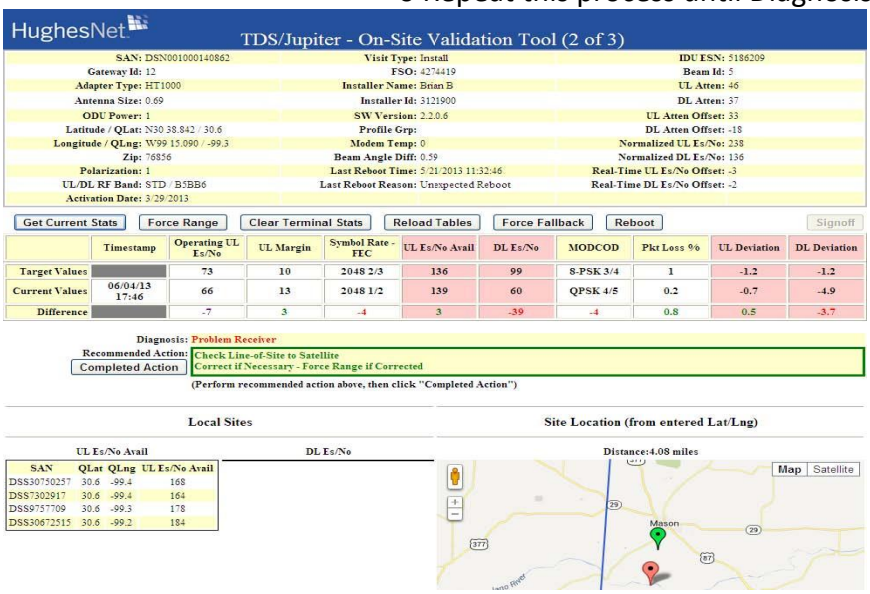


13. If Diagnosis reads OK, tap Signoff (Proceed to step 14)
    - This indicates the installation is good

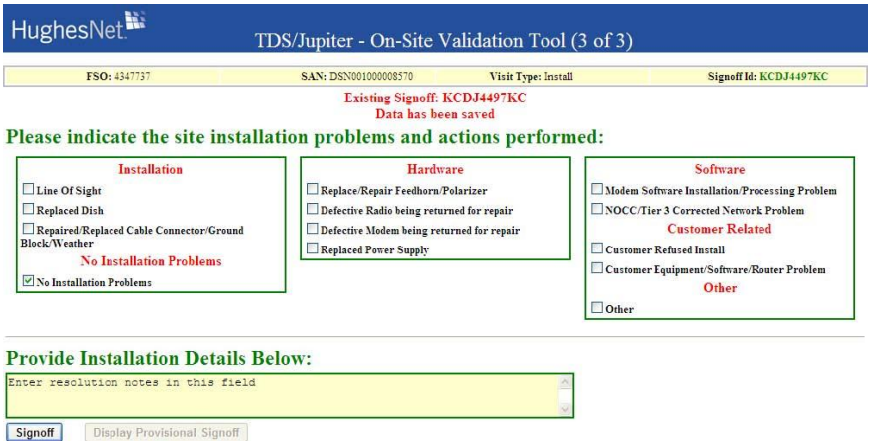


13b. If Diagnosis does not read OK, perform the Recommended Actions, and tap Complete Action

    - Repeat this process until Diagnosis reads

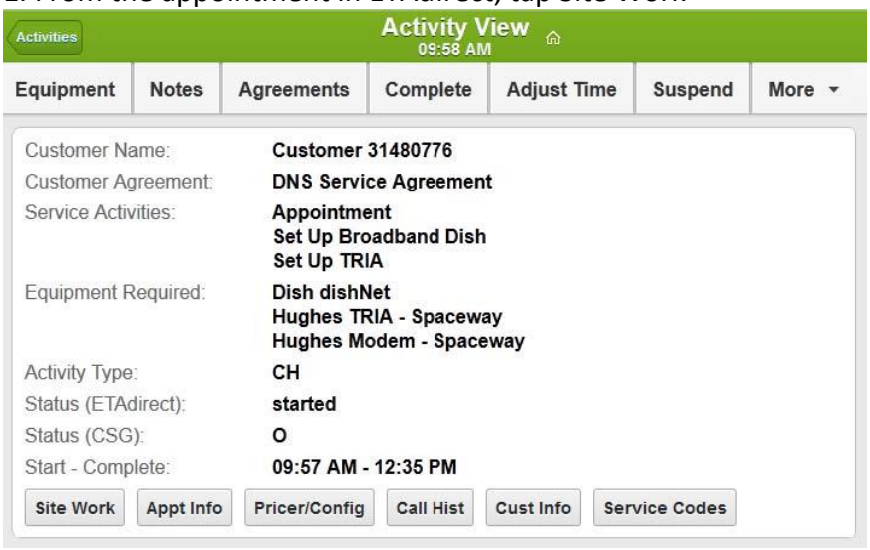


15. Copy the Signoff ID in the upper right of the screen
    - It is a requirement to enter the Signoff ID into ETAdirect
    - Do NOT close this window; if it is closed before capturing the Signoff ID in ETAdirect, repeat the process again to get the Signoff ID

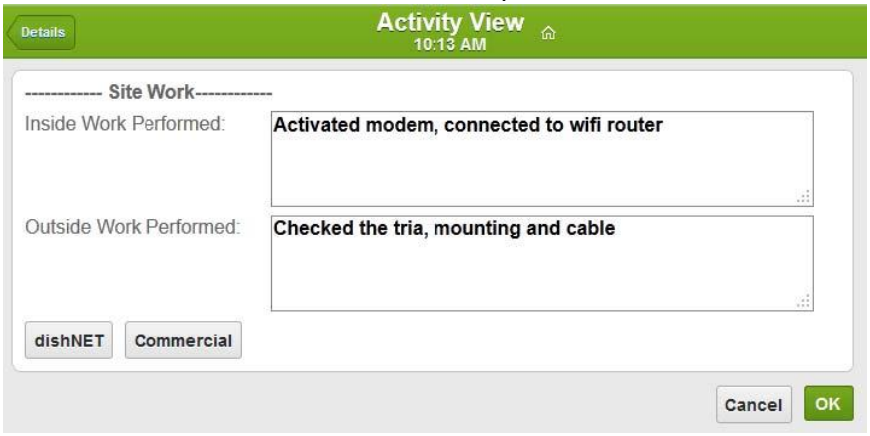


Completing Appointments in ETAdirect

1. From the appointment in ETAdirect, tap Site Work



2. Fill out site work information and tap dishNET



3. Paste the Signoff ID in the OVT Code field
4. Tap OK

SPACEWAY

Preparation

- Perform all pre-arrival and arrival tasks described in the IJA
- Gather materials
    - o SpaceWay modem
    - o Wireless router (temporarily provided by the technician)
    - o Mobile device
    - o Receptacle tester
- Perform the Customer Confirmation tasks described in the IJA
    - o Confirm dishNET package

Indoor Site Survey

- Identify the modem location
    - o Test outlet with the receptacle tester

May require the customer to shut down the computer

Restart the computer after the receptacle test

- Plug the modem and router in to AC power
- Identify potential cable routes and a penetration location
    - o Provides time for the modem and router to boot up
- Connect the wireless router to the modem
- Using the mobile device:
    - o Turn on Wi-Fi detection
    - o Connect to the wireless network

May require turning off mobile data (3G/4G)

    - o Using a Web browser, verify access to Hughes System Control Center (192.168.0.1)

Exterior Site Survey

- Determine grounding option(s)
- Determine Line of Sight
- Determine mount location
- Determine mount type

o Direct to Wall

- o Direct to Brick
- o Direct to Overhang
- o Non-Pen

If temporary mount solution, can be installed at ground level

Use the same ballast requirements as with 500+/1000+ dishes (9 cap blocks)

- o Pole

Requires the use of the Pole Adapter

- o Direct to Roof (requires management approval)

•Use the GPS app on your mobile device to obtain Lat/Long coordinates at the mount location
    o Note these coordinates (for use later in HSCC)
•Determine the cable route
•Measure/estimate the solid-copper dual messenger RG-6 coaxial cable needed
    o This is the permanent cable path from the TRIA to the ground block
•Measure/estimate the solid-copper dual messenger RG-6 jumper needed
    o This is the shortest distance between the TRIA and the ground block
•Measure/estimate the ground wire needed (from the ground block to the ground source)
    o Must be fewer than 20 ft.

Pre-Install Customer Walk Through

Inside

•Inform the customer of the modem placement with proper ventilation, cable route, and penetration

Outside

•Inform the customer of the mount location, cable route, and penetration
•Gain customer approval and estimate job duration

Dish Preparation

Hughes System Control Center (HSCC) (done from the mobile device within range of the wireless network)

•Using a Web browser, navigate to 192.168.0.1
•Click the wizard icon in the upper right of the screen
•Enter the SAN in the Terminal Site Name field (Reference the work order)
•Select 0949505 from the A code drop-down menu
•Select 0749 from the B code drop-down menu
•Select 000103 from the C code drop-down menu
•Select A from the U code drop-down menu
•Enter the Lat/Long coordinates obtained at the mount location
•Click the Submit Installation Parameters button
oA box may appear informing you that the modem needs to modify the GPS coordinates by .001
    o If this happens, click OK and then click Submit Installation Parameters again
•Note the Azimuth, Elevation, Tilt Angle (skew), and polarization settings
    oIf a negative Tilt Angle is listed, subtract it from 90 and use the resulting number for the skew setting
Example: Tilt Angle: -12
    90 - 12 = 78 (set skew to 78)

oIf a positive Tilt Angle is listed, add it to 90 and use the resulting number for the skew setting

Example: Tilt Angle: 12

90 + 12 = 102 (set skew to 102)

Dish Assembly

- Return to the vehicle
- Set up a work area at the back of the vehicle
- Gather and arrange equipment

o Az/El Assembly

- o DishNET reflector
- o Boom arm
- o TRIA and TRIA bracket

- Adjust azimuth, elevation, and skew on the Az/El Assembly
- Attach the Az/El Assembly to the reflector
- Attach the boom arm to the Az/El Assembly
  - o Ensure either the signal absorption tape OR the V-channel is facing up

TRIA Assembly

- Secure the Polarizer Waveguide to the LNB using either collar

o Set the polarity by aligning the R or L engravings with the COM engraving

- o Ensure the O-ring is properly seated

- Secure the Feed Horn to Polarizer Waveguide using the remaining collar
  - o Ensure the O-ring is properly seated
- Cut the solid-copper dual messenger RG-6 cable
  - o Based on the measured estimate between the dish and the ground block
- Prep one end of the solid-copper dual messenger RG-6 cable
  - o Separate enough messenger wire to reach the ground screw
- Feed the solid-copper dual RG-6 cable through the boom arm
- Attach the TRIA bracket to the boom arm
- Attach the TRIA to the TRIA bracket
- Connect to each port on the TRIA

oUse the messenger line (previously attached to the messenger wire) on the IFL(transmit) port

- o Use the non-messenger line on the receive port
- o Torque each connection to 30-inch pounds
- o Wrap each connection with Rescue Tape

- Attach messenger wire to the ground screw on the Az/El Assembly
- Prep both ends of the solidcopper dual messenger RG6 jumper (based on the measured estimate)

o When possible, re-use an existing jumper

- o Attach the barrel connector to the non-messenger receive line on the jumper

- Cut the estimated length of ground wire

Transport Materials

•Load your tool belt with mounting supplies
•Gather the DAPT 2, Squinter, solid-copper dual messenger RG6 jumper, dish assembly, ground wire, mast, and solid-copper dual messenger RG-6 box
•Bring all materials to the mount site
•If a ladder is needed, make a second trip to the vehicle

Dish Installation

Dish Mount and Dish Assembly

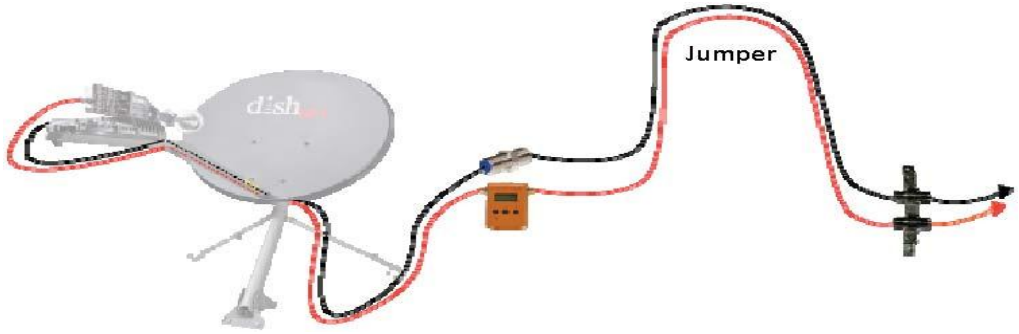
•Follow all mounting steps for the chosen mount
    o Install the mast higher than 4 feet from the ground
    o The bottom of the reflector must be a minimum of 5 feet from the ground
•Install the required struts
    oThe struts should form a triangle with the footplate on the mounting surface
    oThe majority of the assembly's weight should be positioned over the mast — not over the struts
•Attach the dish assembly to the dish mount

Cabling

•Place the solid-copper dual messenger RG-6 cable along the proposed path from the mount to the ground block location
    o Do not fasten the cable to the home at this time
    o Length CANNOT exceed 150 feet
    o Length MUST exceed 25 feet
•Prep the other end of the solid-copper dual messenger RG-6 cable
    o If necessary, cut the cable to the appropriate length
•Install a ground block

DAPT 2 Setup

•Attach the non-messenger (receive) line to the LNB port on the DAPT 2
•Attach the messenger (transmit) line to the barrel connector on the jumper
•Attach the nonmessenger (receive) line of the jumper between the IDU port on the DAPT 2 and the ground block
•Attach the messenger (transmit) line of the jumper between the barrel connector and the ground block



Jumper

Grounding and Cabling

•Connect the ground wire to the ground block
•Install the grounding component
•Run the ground wire to the grounding component and connect
•Run the new solidcopper dual messenger RG6 cable from the ground block to the penetration location
    ORemove the messenger wire from the cable between the ground block and the penetration location
•Drill the penetration
•Feed cables through the bushing and then apply silicone

Interior Cabling

•Install a cut-in box and a dual-wall plate
•Run interior cables to the modem
    o Remove the messenger wire from all interior cabling
•Unplug the modem from AC power
•Connect the messenger line to the SAT OUT (transmit) port on the modem
•Connect the non-messenger line to the SAT IN (receive) port on the modem
•Plug the modem into AC power

Pointing

•Go outside to the DAPT 2 location
•Ensure HSCC displays the Terminal Pointing Info screen – (from the mobile device)
•Verify the DAPT 2 is correctly inline on the receive cable
•Take the DAPT 2 to the mount location
    o Be cautious of unfastened cables
    o Do not damage unfastened cables
•DAPT 2 displays voltage (approx. 11.7 VDC), press Advance (3)

•DAPT 2 displays software version, COMM Startup, Logging VoltMeas, followed by Logging Done, press Advance (3)
•Coarse-point the antenna to the highest SQF for both azimuth and elevation
- o The number on the left is the highest SQF achieved
- o The number on the right is the current SQF being received
- oIf the current SQF reading won't settle on a value, use the Toggle button (2) to smooth out the atmospheric effects on SQF

Peaking (Must be done in the order outlined below)

1.Place the Squinter on the Feed Horn in either of the two azimuth positions and wait for the S QF reading to settle on a value
- o Placed to block the left or right hemisphere of the Feed Horn
- o Note the current SQF reading

2.Rotate the Squinter 180° on the Feed Horn to the opposite azimuth position and note the SQF reading

3.Compare the two azimuth SQF readings
- oThe readings should be within two or three SQF points of each other
- oAdjust the azimuth fine-tune cam and repeat Steps 1–
- 3 until the two azimuth numbers are within two or three SQF points of each other

4.Lock down all azimuth bolts

5.Place the Squinter on the Feed Horn in either of the two elevation positions and wait for the SQF reading to settle on a value
- o Placed to block the top or bottom hemisphere of the Feed Horn
- o Note the current SQF reading

6.Rotate the Squinter 180° on the Feed Horn to the opposite elevation position and note the SQF reading

7.Compare the two elevation SQF readings
- oThe readings should be within two or three SQF points of each other
- oAdjust the elevation fine tune nuts and repeat Steps 5–
- 7 until the two elevation numbers are within two or three SQF points of each other

8.Lock down all elevation bolts and nuts

9.Remove the Squinter and press Advance (3)
- oFind Sys Status 0 should appear and change to FindSys done within two minutes

10.Press Advance (3) to display Center 1

11.Press Advance (3) to display SQNT AZ1

12.Place the Squinter on the Feed Horn in either of the two azimuth positions and press Advance (3)

- o The DAPT 2 displays WAIT AZ1 and will then auto-advance to SQNT AZ2

13.Rotate the Squinter 180° on the Feed Horn to the opposite azimuth position and press Advance (3)

- o The DAPT 2 displays WAIT AZ2 and will then auto-advance to AZ Test Pass

14.Press Advance (3) to display SQNT EL1

15.Place the Squinter on the Feed Horn in either of the two elevation positions and press Advance (3)

- o The DAPT 2 displays WAIT EL1 and will then auto-advance to SQNT EL2

16.Rotate the Squinter 180° on the Feed Horn to the opposite elevation position and press Advance (3)

- o The DAPT 2 displays WAIT EL2 and will then auto-advance to EL Test Pass

17.Remove the Squinter and press Advance (3) to display Center 2

18.Press Advance (3) to display STORE Results

19.Press Advance (3) to display Store=Yes Adv=Yes

20.Press Advance (3) to display Point Exit

21.Press Advance (3) to indicate Yes and complete the peaking process

22.Wait for the HSCC to display state code 25 – (from the mobile device)

Finalize Cable Route

- While waiting for State Code 25, fasten the permanent cable between the dish and ground block to the home
- Leave the DAPT 2 and the jumper installed

Provisioning (from the mobile device)

- Open a new Web browser and navigate to 192.168.0.1
- Click the “Activate - On customer’s computer” link
- Enter the SAN and PIN (reference the work order)
- Click Continue

•Click Continue again
o This redirects you to the www.dish.net landing page
•Return materials to the vehicle
•Get the vacuum

Finalize Appointment

•Go to the modem location
•Unplug the modem from AC power
•Clean up any mess using the vacuum
•Go to the ground block location
o Remove the DAPT 2, barrel connector, and jumper cable from the system
o Connect the solid-copper dual messenger RG-6 cable to the ground block
o Connect the messenger wire to the ground block
o Torque the connections to 30-inch pounds
•Go to the modem location
•Plug the modem into AC power
•Enter work notes and/or paperwork
•Show the customer the www.dish.net landing page using your mobile device to demonstrate I nternet connectivity
•Disconnect the wireless router
•Connect the SpaceWay modem directly to the customer's computer
•Explain the completed work to the customer
•Allow the customer to access the Internet briefly from their computer
oRefer the customer to their PC support if their computer does not access the Internet
oSince you verified Internet access from your mobile device, if the customer's comp uter will not connect, the issue is with the computer and not the modem
•Have the customer sign the agreement(s)
•Thank the customer
•Ensure you have all your tools and equipment:
o Vacuum, wireless router, DAPT 2
o Jumper and barrel connector
•Return to the vehicle
•Update the appointment status to Complete and depart

Legacy Switches

Just like an LNBF, alternates the polarity in a Legacy installation, combines and switches signal from multiple satellite locations.

SW21 Switch

- ••Supports up to 2 orbital locations
- ••1 tuner output
- ••2 LNBFs inputs
- ••Can also be used to cascade a twin and dual LNBF for three orbital locations.

SW64 Switch

- ••Supports up to 3 orbital locations
- ••3 even LNBF inputs
- ••3 odd LNBF inputs
- ••4 tuner outputs
- ••A power inserter must be connected to output to receiver port 1, labeled To Power Inserter

Power Inserter

- ••Must be installed for SW44 and SW64 switches, by connecting the cable in the tuner output labeled 1
- ••These switches need the power from the power inserter because of their large power requirements
- ••Only install the power inserter indoors

Legacy Technology

- ••Legacy technology was the first generation technology used by DISH Network, but is no longer installed.
- ••You will come across Legacy components in the field
- ••You need to know how to recognize, install upgrades, and troubleshoot the customer's issues
- ••It is recognized by the old DISH Network logo

Legacy technology is based on transponders and polarity.

- ••Transponders are the part of the satellite that sends a signal to earth using a specific frequency range
- ••Polarity is the direction of the signal in either a left-hand circular or right-hand circular direction

oo Even numbers transponders use: left-hand polarity

oo Odd numbered transponders use: right-hand polarity

Polarity allows us to broadcast twice the number of channels in a specific frequency range.

••In Legacy installations, the switch or LNBF alternates the two polarities allowing us to reuse the same frequency

••Uses the 950-1450 frequency range and one polarity at a time, without a switch

••If only one coax cable per satellite location is used, such as with an SW21 switch, the LNBF must switch polarities

••If only one polarity is available at a time, the SW21 can support only one set top box

Legacy LNBF

Single LNBF

••1 orbital location

••1 output

••Directly connects to 1 solo receiver

••Usually used alone with a DISH 300 (single orbital location dish antenna)

Dual LNBF

••1 orbital location

••2 outputs

••Directly connects up to 2 solo receivers or 1 duo receiver

••Can be used to see only 1 orbital location and for direct connections of up to 2 receivers

••Two dual LNBFs are used in conjunction with a multi-dish switch to view multiple orbital locations

Twin LNBF

••2 orbital locations, 110° and 119°

••2 outputs

••Directly connects up to 2 solo receivers or 1 duo receiver

••Used only with a DISH 500

••Has internal switch, and therefore cannot be used with any other switch except an SW21, to receive signals from three orbital locations when used with a second dish

Quad LNBF

••2 orbital locations (110° and 119°)

••4 outputs

••Directly connects up to 4 solo receivers or 2 duo receivers or 2 solo and 1 duo receiver

Single->Dual->Twin->Quad

CSAT

What is CSAT?

CSAT stands for Customer Satisfaction, which businesses use to measure how well their products and services meet and exceed the customer's expectations. Additionally, there is a strong correlation between Customer Satisfaction and Customer Loyalty. In today's marketplace where competition is fierce, customer satisfaction is critical in differentiating DISH from other pay-television providers.

DISH has the best technology. DISH has the best value in programming. It is critical that we regain our place at the top of the pay-television industry with the best in class service.

CSAT Survey Questions

Scale: Please rate each question on a scale of 1 through 10, with 1 being very dissatisfied, and 10 being very satisfied.

New Connect/Re-connect (NC/RC)
(Listen to the survey)

- Press "1" if you were the person home during the service appointment, or "2" if it was someone else in your household
- Please rate DISH on keeping you updated on the technician's arrival time.
- Please rate the technician on their appearance and professionalism.
- Please rate the technician on how well

Trouble/Service Call (TC/SC)
(Listen to the survey)

- Press "1" if you were the person home during the service appointment, or "2" if it was someone else in your household
- Please rate DISH on keeping you updated on the technician's arrival time.
- Please rate the technician on their appearance and professionalism.

Upgrade/Mover Survey (UP/MV)
(Listen to the survey)

- Press "1" if you were the person home during the service appointment, or "2" if it was someone else in your household
- Please rate DISH on keeping you updated on the technician's arrival time.
- Please rate the technician on their appearance and professionalism.
- Please rate the technician on how well

they discussed dish placement, cabling, and receiver locations with you prior to the work being done

- Please rate the technician for verifying that the DISH Network system and programming works properly

- Please rate the technician on explaining the basic features of the remote control and how to use the DISH Network system

- Please rate the technician on respecting your home and cleaning up after the service was completed

- Please rate how likely you would recommend this technician to friends or family if they were to have the same service performed

- Please rate the technician on explaining the basic features of the remote control and how to use the DISH Network system

- Please rate the technician on respecting your home and cleaning up after the service was completed

- Please rate how likely you would be to recommend this technician to friends or family if they were to have the same service performed

- Press “1” if the technician completely resolved your issue or “2” if you feel your issue was not resolved

they discussed dish placement, cabling, and receiver locations with you prior to the work being done

- Please rate the technician for verifying that the DISH Network system and programming works properly

- Please rate the technician on explaining the basic features of the remote control and how to use the DISH Network system

- Please rate the technician on respecting your home and cleaning up after the service was completed

- Please rate how likely you would recommend this technician to friends or family if they were to have the same service performed

Grounding the System

The importance of proper grounding cannot be overemphasized. It will minimize the potential for damage to the system and maximize safety.

Grounding is probably the source of the greatest confusion in understanding electrical distribution in general – and this confusion has been even greater in relationship to DBS systems.

According to the National Electric Code (NEC), the purpose of grounding is to "limit voltages due to lightning, line surges or unintentional contact with higher voltage lines to stabilize voltages and to provide a path in order to facilitate the operation of over-current devices."

Note that the purpose of grounding cited by the NEC does *not* mention the protection of equipment. The intent of the NEC grounding provisions is to ensure that electrical systems are as safe as possible for the humans who use them. For more information, refer to the *National Electrical Code* (NEC) and local electrical codes. You can find the entire *NEC* at your local library.

The Dishnetwork satellite system is grounded for several reasons:

1. *Grounding is an NEC requirement.*

NEC Code 250.52 states:

(A) Electrodes Permitted for Grounding.

(1) Metal Underground Water Pipe. A metal underground water pipe in direct contact with the earth for 3.0 m (10 ft) or more (including any metal well casing effectively bonded to the pipe) and electrically continuous (or made electrically continuous by bonding around insulating joints or insulating pipe) to the points of connection of the grounding electrode conductor and the bonding conductors. Interior metal water piping located more than 1.52 m (5 ft) from the point of entrance to the building shall not be used as a part of the grounding electrode system or as a conductor to interconnect electrodes that are part of the grounding electrode system.

2. *The ground point shunts to ground any electromagnetic interference, i.e. voltage, in the outer "shield," preventing it from reaching the inner conductor.* Grounding the shield serves to nullify the effects of stray signals by "grounding out" – or reducing to a zero potential, the voltage which is picked up by the outer shield. This prevents much of the signal from potentially reaching the inner wire core.

3. The ground block dissipates electrical charge to ground.

ARTICLE 810 Radio and Television Equipment

810.1 Scope

This article covers antenna systems for radio and **television receiving equipment**, amateur radio transmitting and receiving equipment, and certain features of transmitter safety. **This article covers antennas such as** multi-element, vertical rod, and **dish**, and also covers the wiring and cabling that connects them to equipment. This article does not cover equipment and antennas used for coupling carrier current to power line conductors.

Masts and metal structures supporting antennas shall be grounded.

Material The grounding conductor shall be of copper, aluminum, copper-clad steel, bronze, or similar corrosion-resistant material. Aluminum or copper-clad aluminum grounding conductors shall not be used where in direct contact with masonry or the earth or where subject to corrosive conditions. Where used outside, aluminum or copper-clad aluminum shall not be installed within 450 mm (18 in.) of the earth.

Ground Screw

To simplify the installation process, we are now using the green ground screw in place of the ground lug for most install situations. This will now be the preferred method for providing continuity between the dish mast and messenger cable in the grounding system. In the future, the green ground screw will come pre-installed on masts to further simplify installations.

Why It's Important

The green ground screw simplifies installations and reduces installation cost. Unlike the ground lug, technicians no longer need to scrape paint off the mast to ensure electrical continuity. This will save time and effort.

What I Need to Do

Install the Green Ground Screw

Begin by threading the green ground screw into one of the small holes located on the footplate (Fig. 1/Fig. 2). Thread the green ground screw (Fig. 3) using the ¼" driver of your 6-in-1 screwdriver (Fig, 4). Tighten the green ground screw just enough so that the messenger wire can still fit behind it.

Figure 1: Correct (footplate, small-hole side)

Figure2:Wrong(footplate,large- holeside)

Figure 3: Ground screw threaded

Figure 4: ¼" Driver on 6-in-1 screwdriver

Prepare the Messenger Cable

Separate a short section of the messenger wire from the cable and strip the plastic coating off the end (Fig. 5). Once the coating has been peeled off, create a “U” shape with the bare end of the messenger wire. This “U” shape will be used to wrap around the ground screw.

Figure 5: Messenger wire separated

Figure 6: “U” shape

Finish the Green Ground Screw Installation

Now take the “U”-shaped end of the messenger wire and hook it around the green ground screw (Fig. 7). The wire should extend from the cable to the ground screw in as straight a manner possible with no twisting or sharp bends. Hooking the “U” shape so that the end is in a clockwise orientation will allow for the best results. Then tighten the ground screw, making sure that the messenger wire is pinched between the head of the screw and the foot plate (Fig.8).

Figure 7: Hooked Clockwise (when the screw is tightened, it “grabs” the messenger wire)

Figure 8: Tighten the green ground screw

Note: Each green ground screw is intended for a single messenger wire. The green ground screw will be available for use in most instances; however there are times that a ground lug will still be necessary. As a result, DNS will continue to provide ground lugs for those specific situations (e.g. when installing wing dishes and mounts that do not utilize a foot plate).

Every DISH installation is required to be grounded based on NEC requirements. There are five main steps needed to ground a DISH installation. This document outlines the steps, components and how to use them.

1 Dish Bonding

• Messenger wire must be attached to foot plate with either a dual terminal ground lug or green self-tapping ground screw
• If dual ground lug is used, scrape the paint on the foot plate to ensure metal to metal contact and connect the messenger wire to an open port
• If self-tapping green ground screw is used, it must be tightly secured to the foot plate
• If using a wing dish:
• Must use a dual ground lug on the first dish
• Attach a green ground wire from the wing dish's dual ground lug or green ground screw to the first dish's dual ground lug

Ground Lug

Ground Screw

2 Dish to Ground Block Wiring

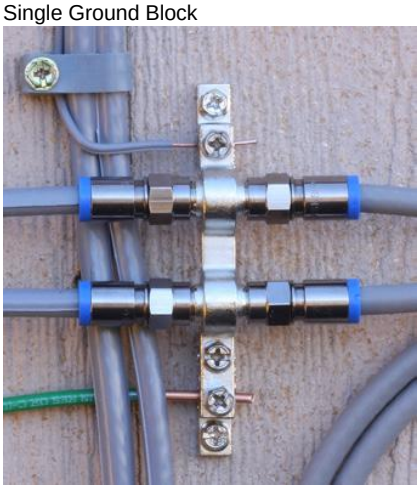
• Messenger wire must be a continuous run from the foot plate to ground block or switch
• Wire CANNOT be spliced
• Maximum total cable run of 200 ft. between LNBF and receiver must be taken into consideration

3 Ground Block Bonding

• The ground block must be placed on the exterior of the home and within 20 ft. of the ground source
• One ground block can be used to connect up to two receivers
• Receivers can be any combination of single or dual tuners
• If multiple ground blocks are needed:
• The ground blocks must be bonded together with a small piece of ground wire
• Each ground block must be secured with its own two screws
• The following switches can also be used as ground blocks if they have the gray coating and UL stamp:
• DP34 switch

• DPP33 switch
• DPP44 switch

Single Ground Block



Multiple Ground Blocks

4 Ground Block to Ground Source Wiring

• Run 10 gauge green copper ground wire from the ground block to the ground source
• Ground wire must be as straight as possible
• Ground wire CANNOT exceed a maximum of 20 ft. from the ground block to the ground source

5 Ground Source Bonding

There are six possible sources to bond a DISH installation to ground. They are listed in order of **easiest to install/locate**.

1. Intersystem Bonding Terminal

The intersystem bonding terminal is a terminal that is provided as a grounding site by the electrician that wires the house.
• Commonly found near the exterior meter box and cable/
phone distribution located on the side or rear of the home
• Ground wire can be directly connected to one of the open terminals

No component is needed

2. Meter Box, Service Equipment/Power Service/AC Disconnect Enclosure

The meter box, service equipment, power service and AC disconnect enclosures include any metal enclosure, as long as it is connected visually with rigid conduit to the grounding electrode conductor.

- Commonly found on the exterior side or rear of the home
- Component cannot impede the opening/closing of the enclosure

Corner Clamp

Side Clamp

Strap (limited use)

3. Rigid Electrical Conduit

The rigid electrical conduit is a metal enclosure housing electrical wiring.

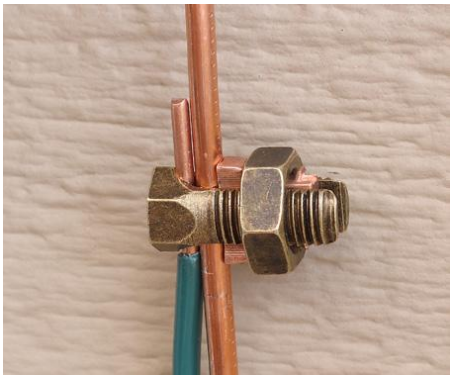
- Commonly found in various locations on the exterior of the home and near the meter box
- Conduit Must be continuous to meter box

Steel Pipe Strap

4. Grounding Electrode Conductor

The grounding electrode conductor is a #6 copper or aluminum wire running from the grounding electrode to the meter box.

- Commonly found near the exterior meter box on the side or rear of the home



Split Bolt

5. Interior Grounded Cold Water Pipe

The interior copper cold water pipe is part of the home's water distribution system.

• Commonly found near the home's utilities which could be in the basement or utility closet

• Ground location must be on the interior of the building within 5 ft. of the water pipes entrance

• External water spigots are not an acceptable ground source

Copper Pipe Strap

6. Building Grounding Electrode or Conductor

The building ground electrode system includes the ground rod and structural frame of the home.

• Usually difficult to locate and rarely exposed

The ground rod - Minimum of 1/2 inch diameter and buried 8 ft. into the earth

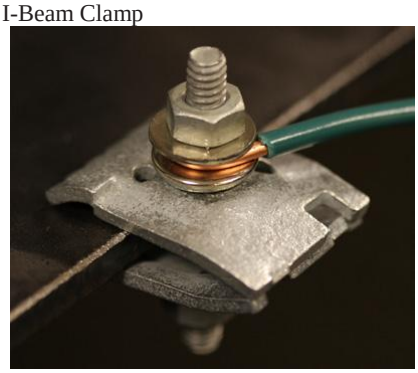
• Commonly found near the exterior meter box and grounding electrode conductor

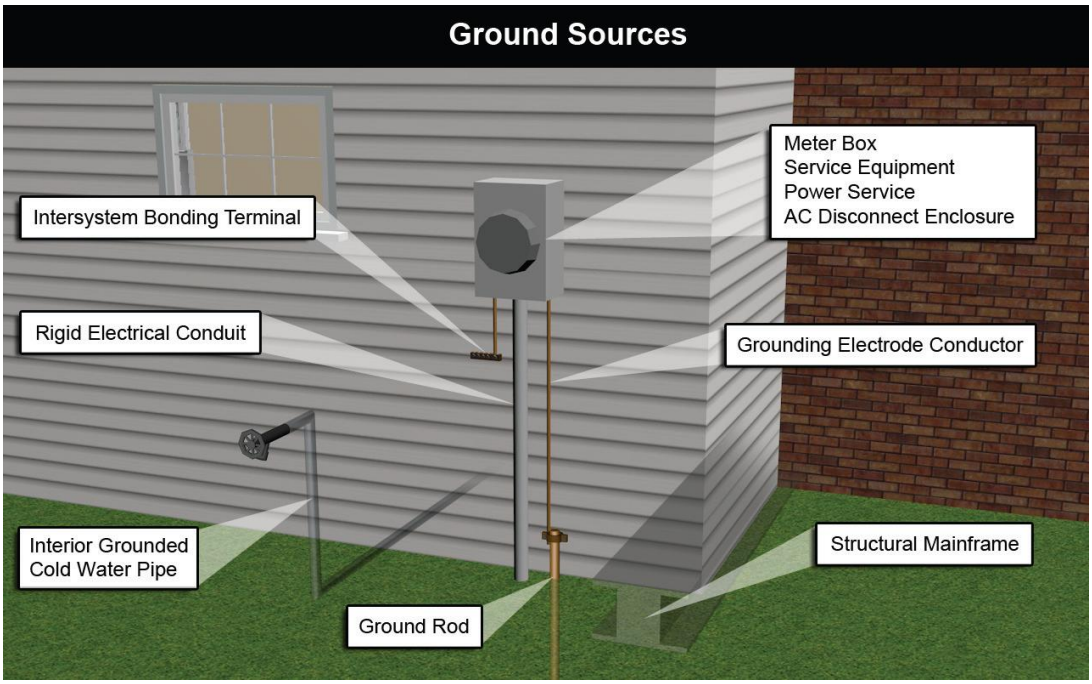
The structural mainframe of a building - Metallic I-beams

• Commonly found in the basement, crawl space or under a mobile home

Ground Rod Clamp

I-Beam Clamp




Ground Sources
Meter Box
Service Equipment
Power Service
AC Disconnect Enclosure
Intersystem Bonding Terminal
Rigid Electrical Conduit
Grounding Electrode Conductor
Interior Grounded
Cold Water Pipe
Structural Mainframe
Ground Rod

Approved as Compatible PPC Connectors

EX6XL

• The XL is stamped on the black sleeve of the barrel (Note - when used in a system, the connectors must be compressed)
• The number that follows the marking on the connector (e.g. PPC EX6 - 04) is the year the connector was manufactured (the 04 in this example).

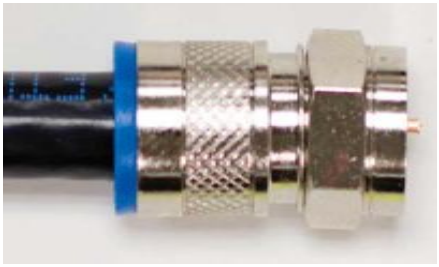
Compressed

Uncompressed

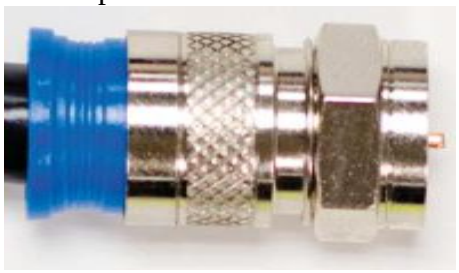
CMP6

• Has a blue colored end (Note – when used in a system, the connectors must be compressed)
• Can also be identified by the metal mesh sleeve in the middle of the connector

Compressed



Uncompressed



Unapproved PPC Connectors

EX6 (Short)

- The black sleeve in the middle of the barrel is much shorter than the approved XL version and does not have the XL stamp
- It is common to find EX6 short connectors uncompressed as it requires an adjusted compression tool

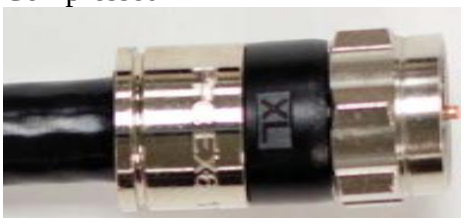
Compressed

Uncompressed

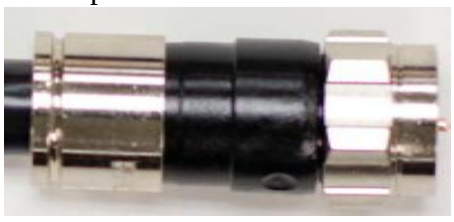
EX6XL Plus

- The difference between these and the approved EX6XL is the design of the nut used to torque the connection
- The PLUS or the Signaltight are not stamped anywhere on the connector; the stamping looks exactly like the non-Signaltight versions

Compressed



Uncompressed



EX6 Plus (Short)

- The difference between these and the approved EX6XL is the design of the nut used to torque the connection
- The PLUS or the Signaltight are not stamped anywhere on the connector; the stamping looks exactly like the non-Signaltight versions

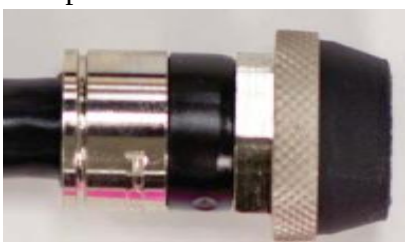
Compressed

Uncompressed

EX6XLWS (Aquatight)

- Neither the WS nor the Aquatight are stamped on the connector; the manufacturer stamping looks exactly like the non- Aquatight versions
- The two distinguishing factors are the rubber grommet and the round mesh threading on the nut for torquing the connector

Compressed



Uncompressed

EX6WS (Short Aquatight)

- Neither the WS nor the Aquatight are stamped on the connector; the manufacturer stamping looks exactly like the non-Aquatight versions
- The two distinguishing factors are the rubber grommet and the round mesh threading on the nut for torquing the connector

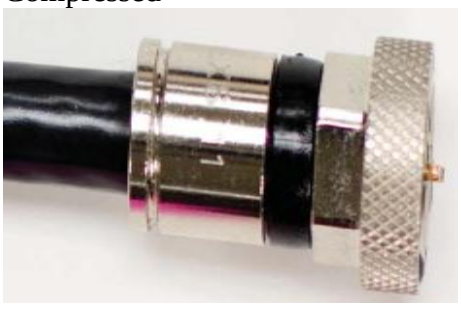
Compressed

Uncompressed

EX6WS (Short) Torn

- Neither the WS nor the Aquatight are stamped on the connector; the manufacturer stamping looks exactly like the non-Aquatight versions
- This is an example of a torn EX6WS Short that might be encountered in the field; the rubber grommet has been removed

Compressed

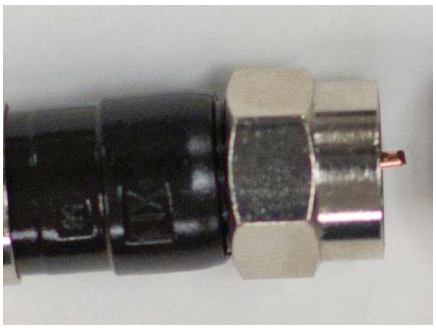


Uncompressed

Side-by-Side Comparison

APPROVED AS COMPATIBLE

In this example, the PPC connector being used is the approved EX6XL.
The connector is compressed, and the “XL” is clearly labeled on the sleeve



This is a closeup of the approved EX6XL connector. Notice that the nut is smooth and angular, compared to the unapproved EX6XL Plus.

UNAPPROVED CONNECTORS

In this example, the connectors being used are the unapproved EX6, or EX6 Short connectors. These are not compressed, and the uncompressed sleeves are much shorter than their EX6XL counterparts.

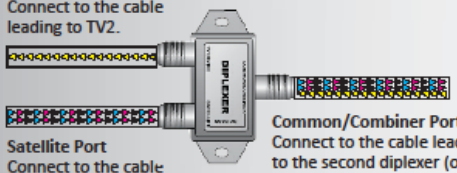
In this closeup of the unapproved EX6XL Plus, note the distinct shape of the nut. Instead of smooth, flat angles, the nut is ridged.

Hardware: ViP or Earlier

Version 1.1

Diplexer

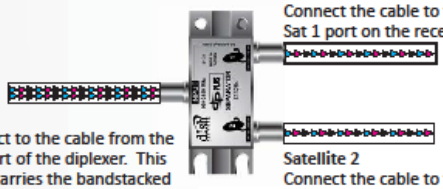
TV Device Port
Connect to the cable leading to TV2.



Satellite Port
Connect to the cable leading to the LNBF.

Common/Combiner Port
Connect to the cable leading to the second diplexer (or triplexer). This allows the satellite signal and TV2 signal to be stacked on this cable.

Separator

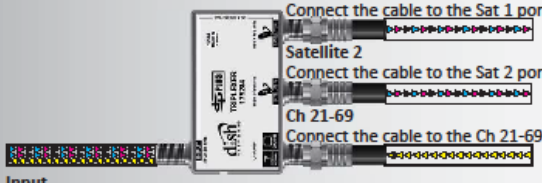


Satellite 1
Connect the cable to the Sat 1 port on the receiver.

Input
Connect to the cable from the SAT port of the diplexer. This cable carries the bandstacked satellite signal (TV1 and TV2).

Satellite 2
Connect the cable to the Sat 2 port on the receiver.

Triplexer



Satellite 1
Connect the cable to the Sat 1 port on the receiver.

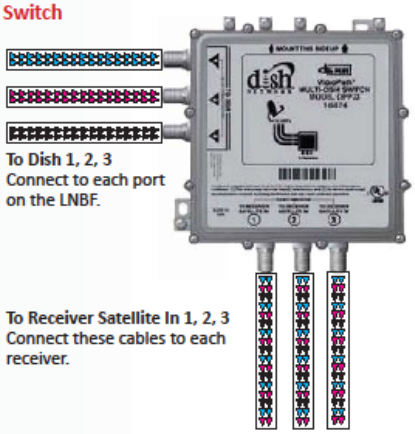
Satellite 2
Connect the cable to the Sat 2 port on the receiver.

Ch 21-69
Connect the cable to the Ch 21-69 port on the receiver.

Input
Connect the cable from the In/Out port of the diplexer. This cable carries the bandstacked satellite signal (TV1 and TV2) and has the TV2 out signal stacked on the line.

- Backfeed/OTA signal
- MoCA signal
- Orbital 1
- Orbital 2
- Orbital 3

Switch



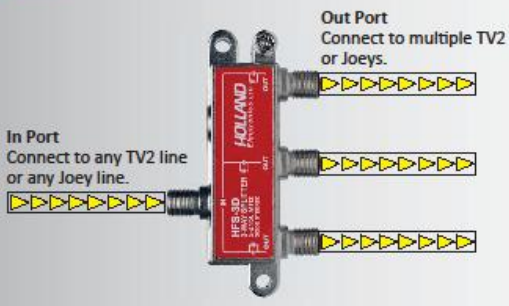
To Dish 1, 2, 3
Connect to each port on the LNBF.

To Receiver Satellite In 1, 2, 3
Connect these cables to each receiver.

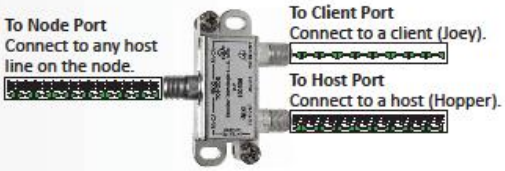
Hardware: ViP or Earlier

Version 1.1

Splitter



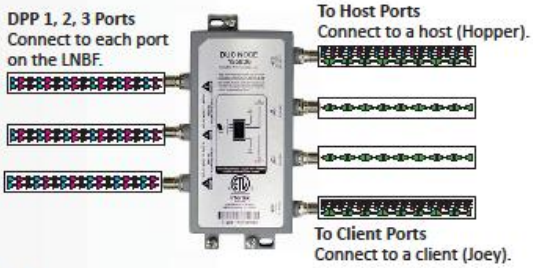
Tap


To Node Port
Connect to any host line on the node.
To Client Port
Connect to a client (Joey).
To Host Port
Connect to a host (Hopper).

Solo Node

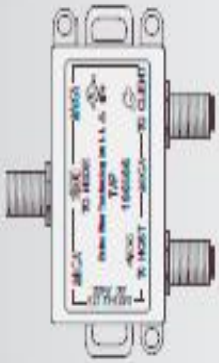
DPP 1 Port
Connect to a port on the LNBF.
DPP 2 Port
Connect to a port on the LNBF.
To Client Port
Connect to a client (Joey).
To Host Port
Connect to a host (Hopper).

Duo Node


DPP 1, 2, 3 Ports
Connect to each port on the LNBF.
To Host Ports
Connect to a host (Hopper).
To Client Ports
Connect to a client (Joey).

- Backfeed/OTA signal
- MoCA signal
- Orbital 1
- Orbital 2
- Orbital 3

Hopper Joey System Job Aid



Installation Rules

Only 2 components can be between any 2 Hopper Joey System receivers

- Nodes and 75 Ohm Terminators do not count for this restriction
- Minimize number of devices for the installation

Nodes must be connected to a DPP LNBF or DPP switch

Do not install any non-Hopper Joey System components after the Node

Maximum 200-foot cable length from LNBF to farthest Hopper

Maximum 200-foot cable length between any Hopper and Joey

Host lines must use RG-6 coaxial cable

Client lines can use either RG-59 or RG-6 coaxial cable

Taps can only be installed on host lines

When using 2 Taps, the entire Hopper Joey System must use RG-6 coaxial cable

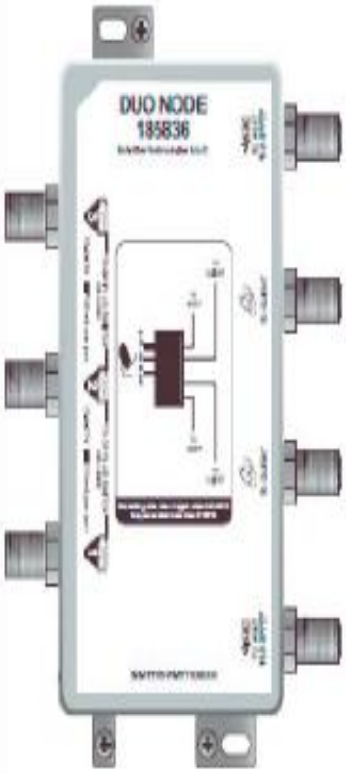
All unused ports must be capped with 75 Ohm Terminators

When using a power inserter, it must be installed before the Node

- Connect ports 2 - 4 on the switch to the Node and port 1 to the power inserter

Install the Hopper at the primary TV location; it supports PIP

Always install, download, and activate the Hopper before plugging in any Joey receivers



Hopper Joey System Components

Hopper
Hopper host receivers connect to Joey client receivers through Nodes via coaxial cables. Hopper host receivers can share any content with any Hopper or Joey receivers installed in the system.

- Host receiver (main receiver)
- 3 tuners
- 2 Terabyte hard drive (Up to 250 hours of HD program recording)
- Up to three Joey client receivers supported
- Supports PrimeTime Anytime (PTAT)
- Only connects via a TO HOST port (host line)
- HDMI, RCA, and digital audio outputs are supported
- Ethernet port for broadband connectivity is supported
- Uses the 40.0 UHF 2G remote
  - Colored shortcut buttons for easy menu access
  - Increased distance and faster communication
- Picture-in-Picture and Blockbuster @Home supported
- USB port can be used for Wi-Fi adapter, external hard drive, or Sling adapter

Joey
Joey client receivers connect to Hopper client receivers through Nodes via coaxial cables. Joey client receivers can request any content from any Hopper installed in the system.

- Client receiver
- Requires a Hopper to work
- Must be paired with a Hopper
- Only connects via a TO CLIENT port (client line)
- Compact size is ideal for placement out of view
- Same user interface as a Hopper
- HDMI, RCA, and digital audio outputs are supported
- Internal remote antenna
- BLOCKBUSTER @HOME supported
- Uses the 40.0 UHF 2G remote
  - Colored shortcut buttons for easy menu access
  - Increased distance and faster communication
- Ethernet and USB ports are for future functionality

Solo Node
A Solo Node is the nearest component to the DPP LNBF or DPP switch in the Whole-Home HD DVR system. Nodes manage the transfer of programming between a Hopper and a Joey.

- Requires two DPP satellite inputs
- One Hopper supported
  - One TO HOST port
- One TO CLIENT port supported
- Can be used to ground the DISH system

Duo Node
A Duo Node is the nearest component to the DPP LNBF or DPP switch in the Whole-Home HD DVR system. Nodes manage the transfer of programming between a Hopper and a Joey.

- Requires three DPP satellite inputs
- Up to two Hopper host receivers supported
  - Two TO HOST ports
- Two TO CLIENT ports supported
- Can be used to ground the DISH system

Tap
Taps are used to create a host line and client line from a single host line off of a Node. Think of it as creating a line for a Hopper and Joey from a single host line.

- Limited to one Tap per installation
- One TO NODE port supported
- One TO HOST port supported
- One TO CLIENT port supported

Splitters
Standard 2-way or 3-way splitters can only be used on a client line to support multiple Joey client receivers off of a single client line.
Example: Using a 2-way splitter from the TO CLIENT port on a Tap to support two Joey client receivers.

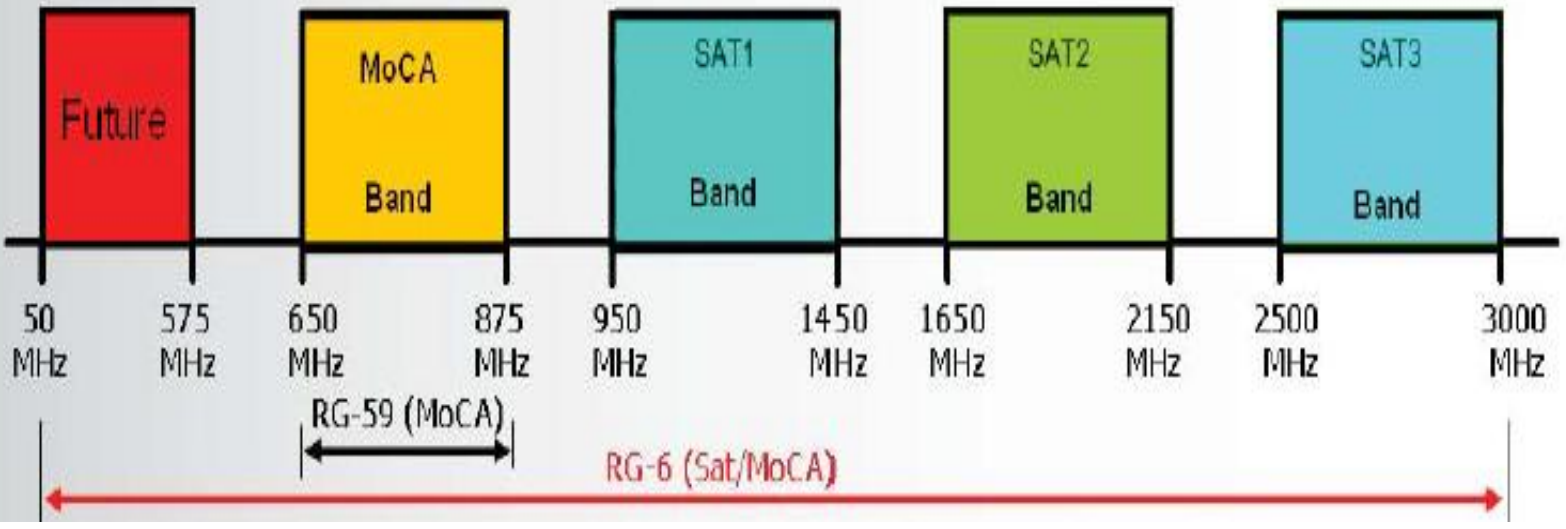
- Only use splitters on client lines
- 2-way or 3-way splitters are supported

75 Ohm Terminator
Use 75 ohm terminators on any unused ports in a Hopper Joey System installation to prevent RF leakage or outside RF interference.

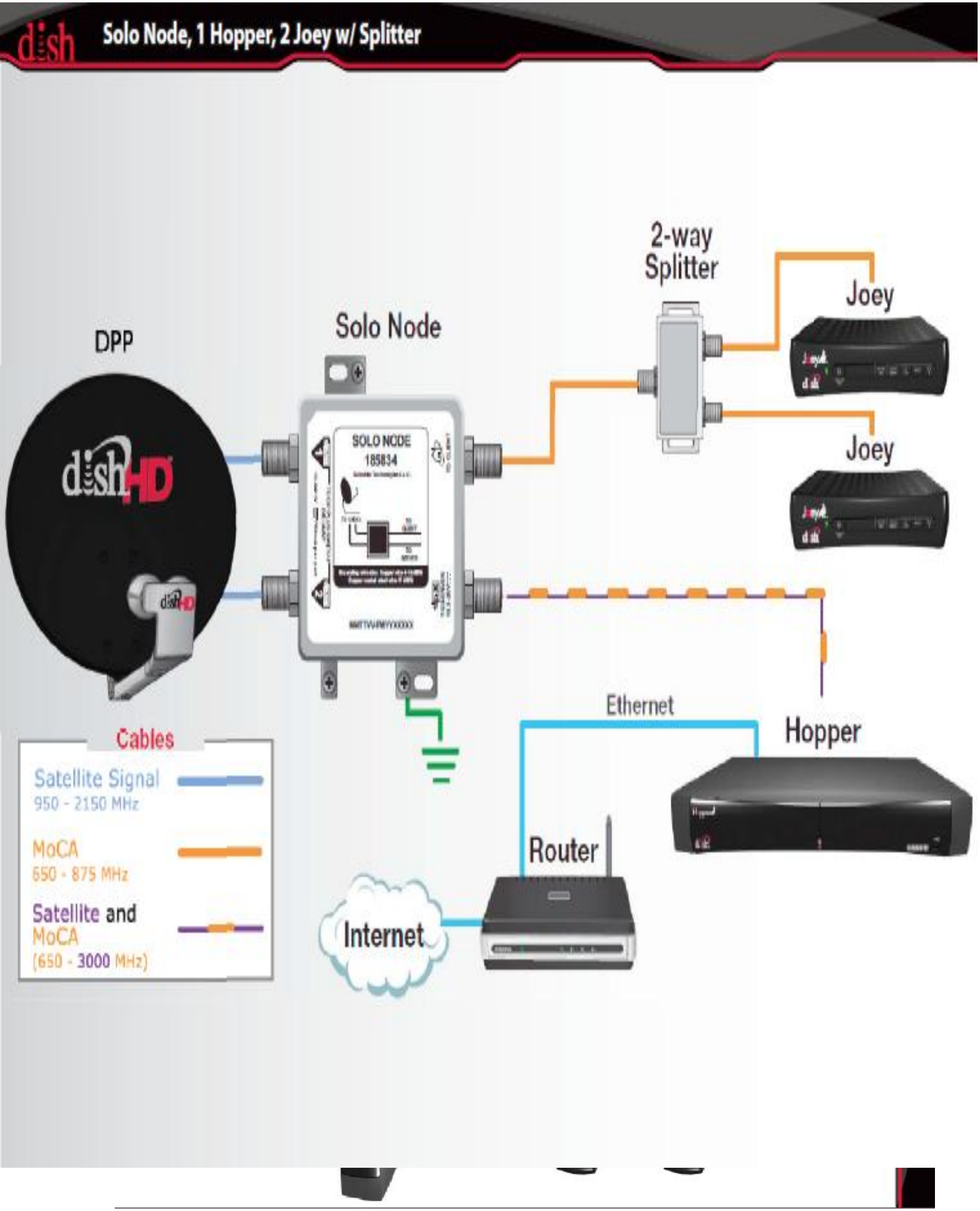
Hopper Internet Connector (HIC)
The HIC makes the Internet connection between the customer's router and the entire Hopper Joey System.

- Only use a HIC on client lines
- One Ethernet port supported
  - Used to connect to the customer's router
- One Home Video Network port supported
  - Carries the Internet connection to the entire Hopper Joey System

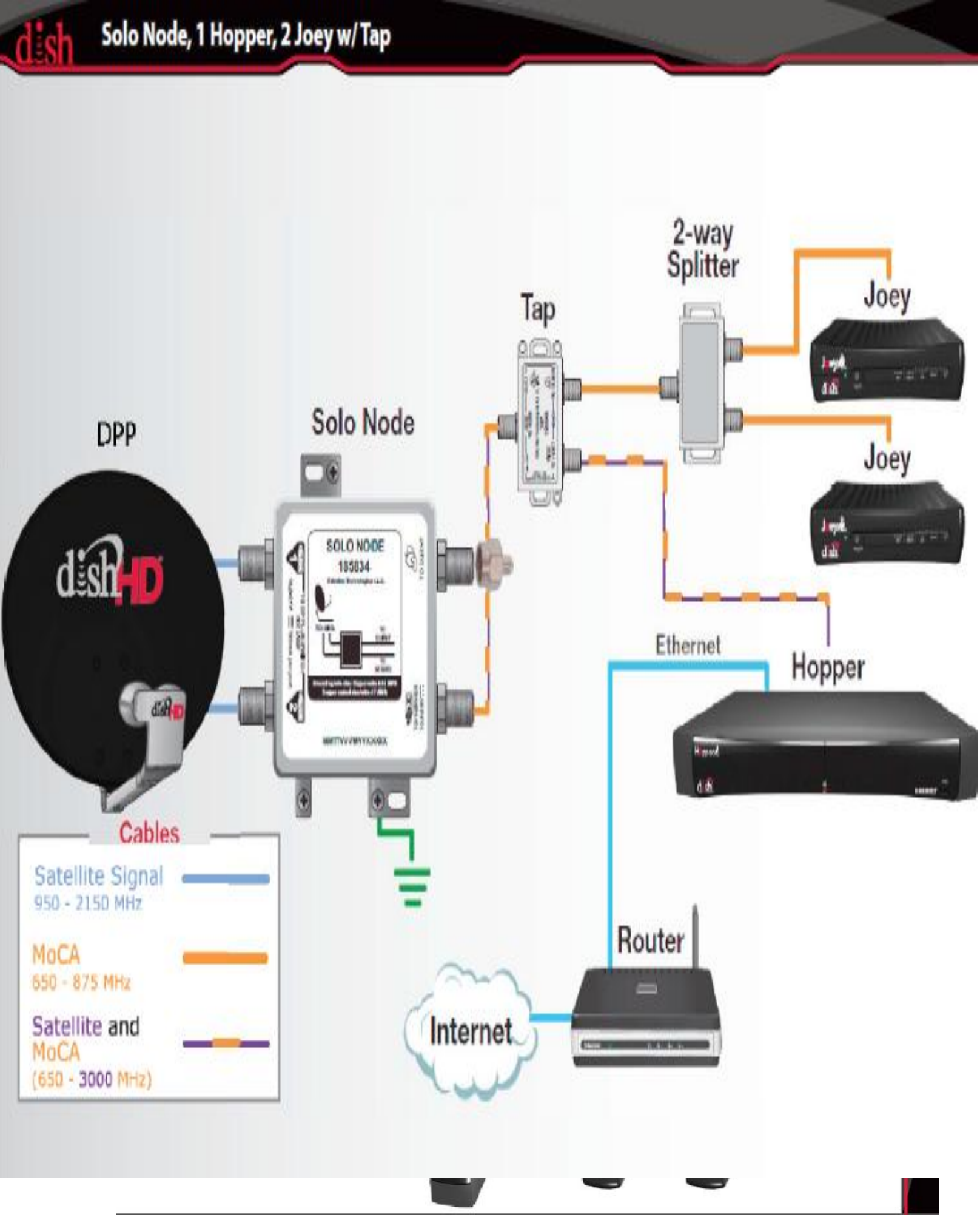
Hopper Joey System Technology



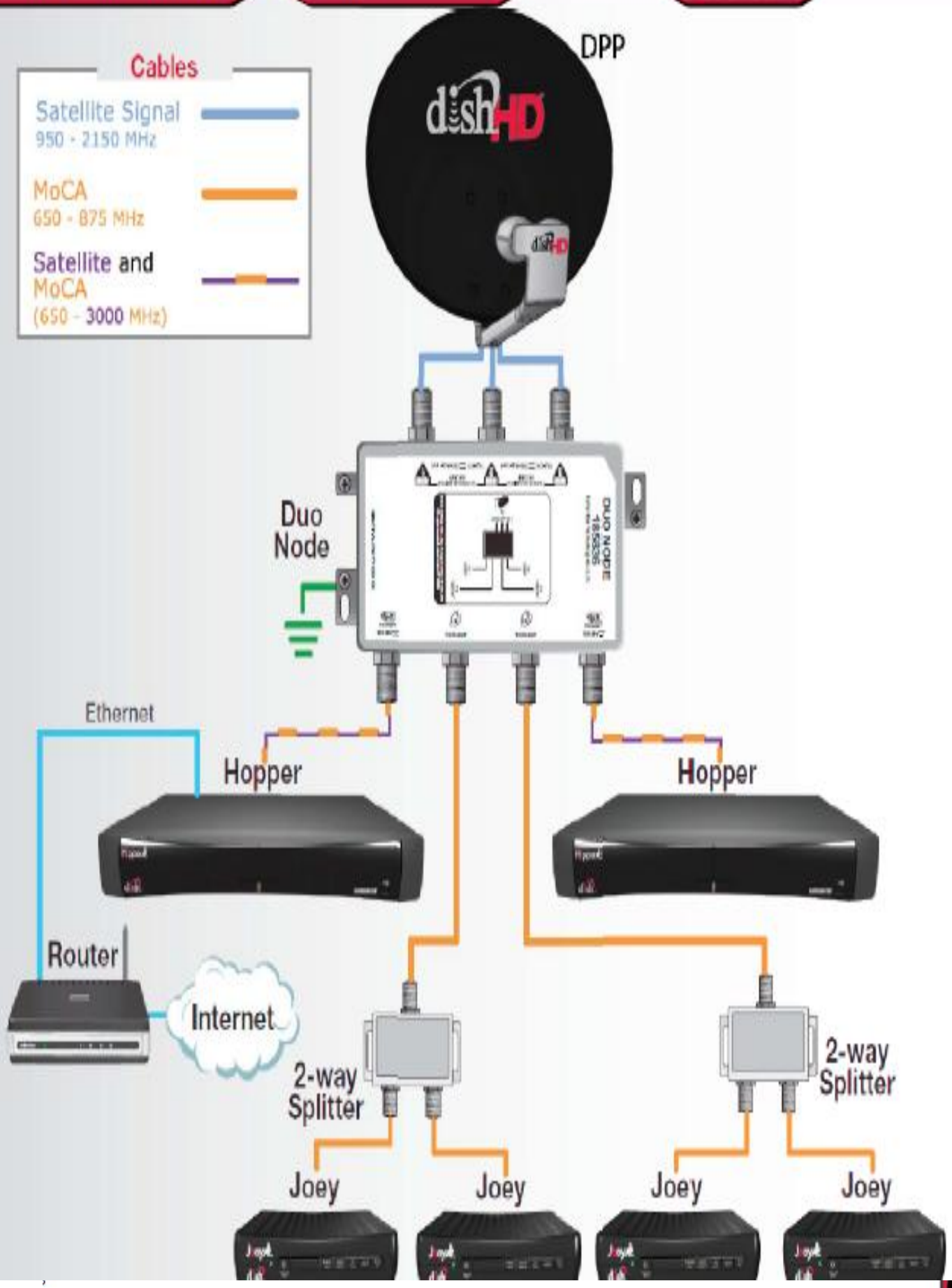
Solo Node, 1 Hopper, 2 Joey w/ Splitter



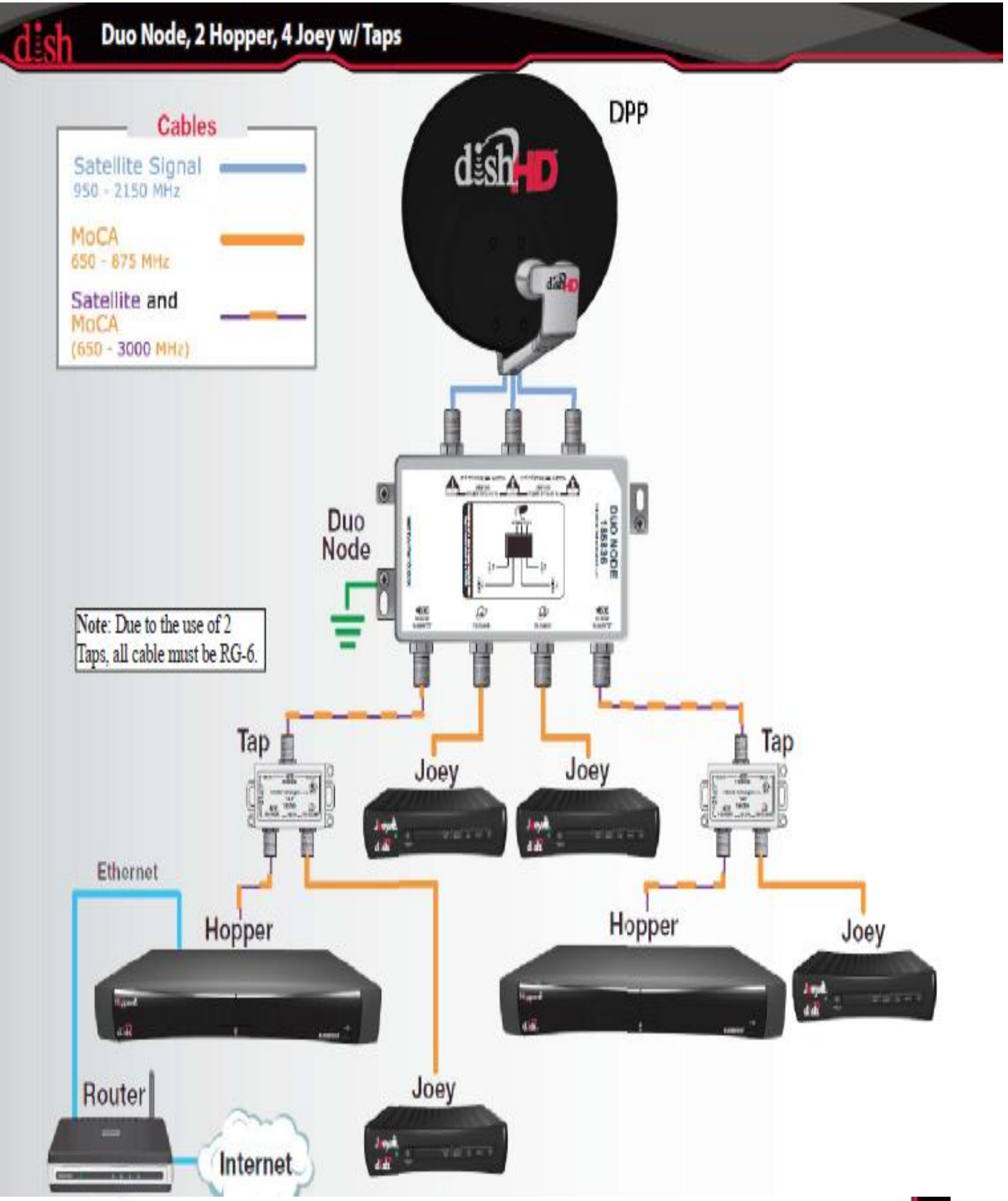
Solo Node, 1 Hopper, 2 Joey w/ Tap



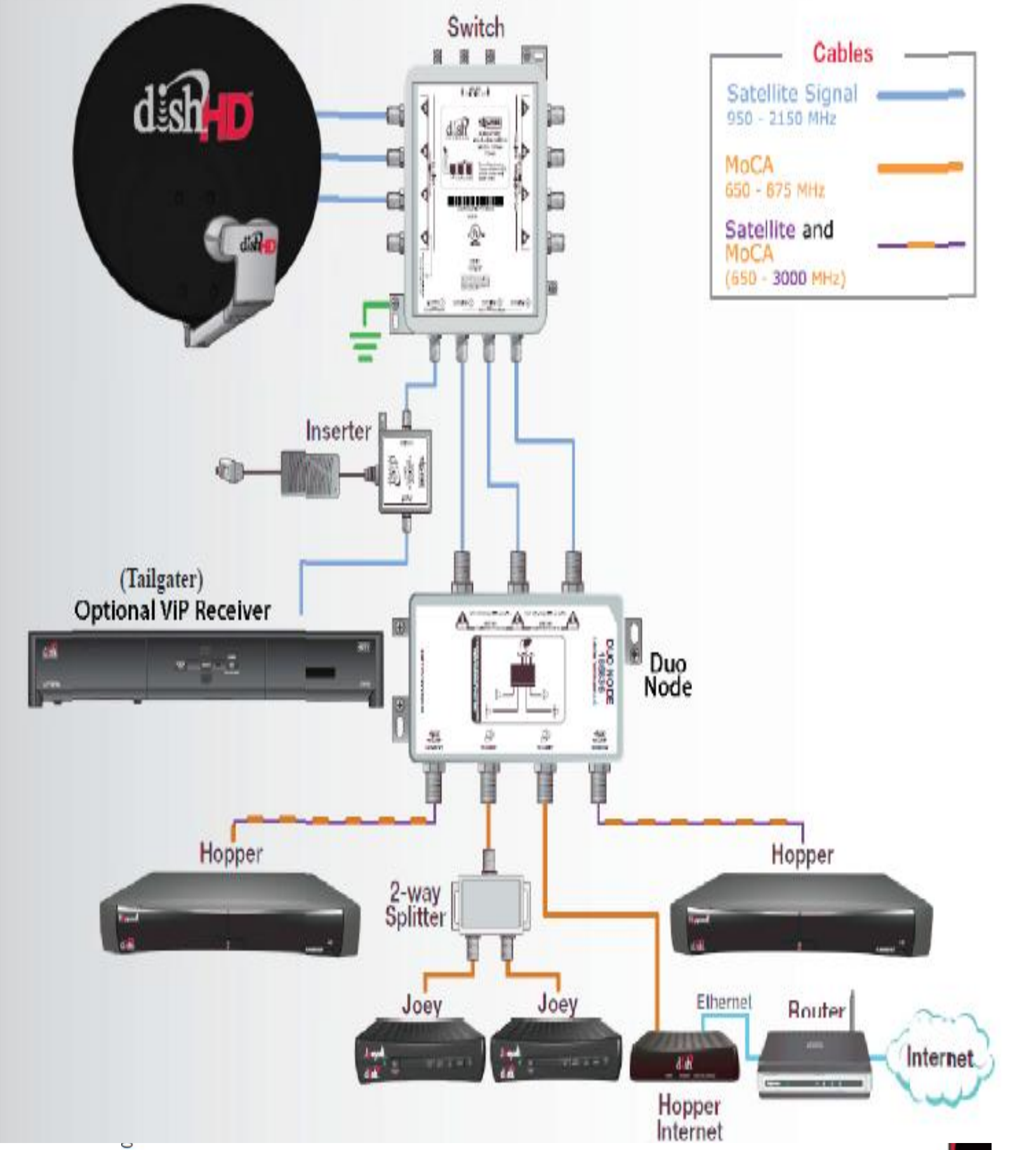
Duo Node, 2 Hopper, 4 Joey w/ Splitters



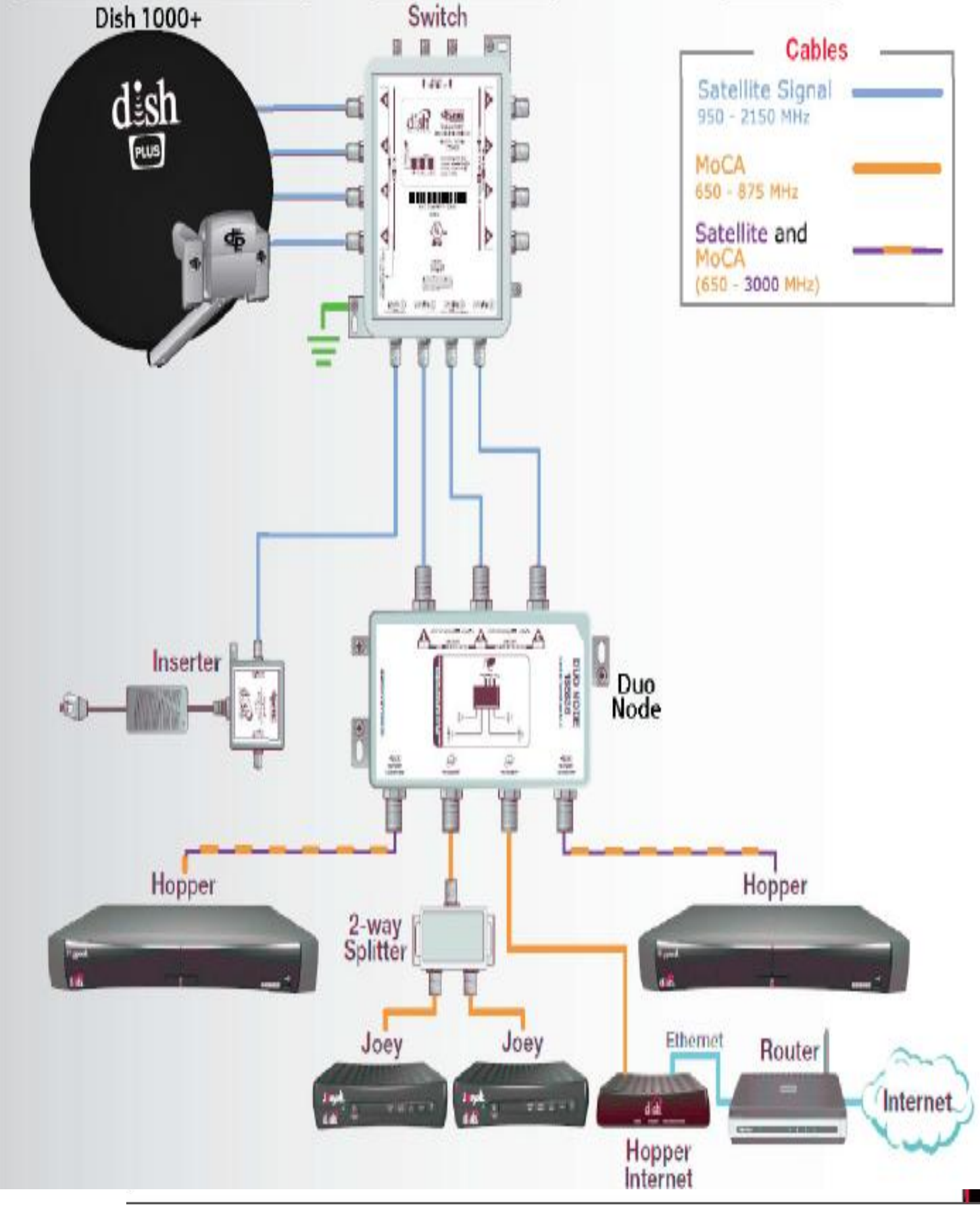
Duo Node, 2 Hopper, 4 Joey w/ Taps



Duo Node, 2 Hopper, 2 Joey w/ Splitter and DPP Switch w/ optional DP/DPP receiver



Duo Node, 2 Hopper, 2 Joey w/ Splitter and DPP Switch w/ Dish 1000+



Installation (Video)

Version 6.4

1. Preparation

Pre Arrival

- Ensure professional appearance and conduct
- Verify correct tools, equipment, and supplies
- Review work order
- Status the customer

Arrival

- Update appointment status to "Start"
- Set out safety cones
- Gather materials
- Briefly look for line of sight
  - If potential LOS issue, skip to Step 4 after introduction with customer

Status the customer

- Introduction
- Give estimated time of arrival
- Confirm customer's address
- Are pets secured?
- Someone 18+ years old present?

Gather materials

- Tablet
- PPE
- Boot covers
- Multi-line identifier
- LAN tester
- Receptacle tester
- Inclinometer
- 7/16" wrench or security shield

2. Customer Confirmation

- Introduction with customer
- Put on boot covers
- Confirm customer's order

Confirm customer's order

- Number of rooms to install
- Equipment in each room
  - HD or SD
  - DVR
- Programming
- Billing amount
- Terms of commitment

3. Receiver/Connectivity Site Survey

- Identify the first receiver location
  - Test outlet with receptacle tester
  - If pre-wired, check for high frequency barrel and tone-out the line
  - If not, determine penetration location
- Check for Internet/phone connectivity
- Identify TV2 location (dual tuner only)
  - If pre-wired, tone-out the line
  - If not, determine penetration location
- Repeat steps for multiple receivers
- Identify potential cable routes
  - Home run box
    - Verify correct lines with multi-line ID
  - Crawl space/attic/garage

Tip

Use a standard color for toning out rooms:

Receiver 1	— Brown
TV2	— Red
Receiver 2	— Orange
TV2	— Yellow

4. Mounting/Cabling Site Survey

- Determine grounding option(s)
- Determine line of sight
- Determine mount location/mount type
- Determine cable route and configuration
- Measure/estimate messenger cable needed (from dish to ground block)
- Measure/estimate ground wire needed (from ground block to ground source)
  - Must be less than 20 ft.

Tip

- Identify if there is existing cable for the Internet
- Determine what connectivity equipment will be used
- Use connectivity pamphlet to explain benefits of connecting

5. Pre-Install Customer Walk Through

Walk Through

- Inform customer of mount location, cable route, penetrations, and receiver locations
  - Inform customer that service call charge will apply to reconfigure receivers
- Gain approval and estimate job length

Vehicle Run 1

- Return to vehicle
- Add time to appointment (if needed)
- Put tablet in standby mode

Advise customer

YOU are the expert! Inform the customer of the best place to mount the dish and run the cables. Only offer additional options if requested by the customer.

6. Dish Preparation

Dish Assembly

- Set up work area at the back of vehicle
- Load tool belt
- Gather and arrange materials
- Adjust skew and elevation to local standards
- Attach skew plate to reflector
- Attach bracket to arm
- Cut and prep estimated messenger cable
- Attach LNBF to messenger cable and bracket
- Attach ground lug/screw to mast
- Assemble specialty mount (if needed)

Transport Materials

- Gather SBSM, dish assembly, and single RG6 cable
- Bring all materials to mount site
- If a ladder is needed, make a second vehicle trip

Load tool belt

- Ground block(s)
- Connectors
- Diplexer(s)
- Flex clips
- Lag screws
- Ground lug/screw
- Grounding component
- Silicone
- Bushing(s)
- Wall plate(s)
- Cut-in box(es)
- Ground wire
- Zip ties

Gather materials

- PPE
- Reflector, mast/footplate, hardware, plastic bracket
- LNBF, messenger cable
- Additional mounting materials
- Drill bit (if needed)

7. Dish Installation

Dish Mount (Direct to Wall)

- Set up and climb the ladder (if needed)
- Find and mark the stud
- Level the footplate
- Mark and pre-drill center holes
- Apply silicone to holes and footplate
- Drive center lag screws 99% in
- Verify mast is level
- Tighten center lag screws
- Drive in and tighten remaining lag screws
- Tighten hardware
- Attach struts (1000.4 long mast, 500+, 1000+)
- Place dish on mast

Pointing and Peaking

- Connect SBSM and confirm settings
- Point dish to optimum signal
- Peak dish with fine-tune adjustments (if applicable)
- Lock dish in and tighten hardware
- Perform a limit scan

Critical steps

- Make sure you hit a STUD when mounting the dish
- Make sure you PRE-DRILL center holes
- Make sure to use the correct number of LAGS:

Wall	- 6 lags (center 2 in stud)
Brick	- 4 lags (not in mortar)
Fascia	- 4 or 5 lags (2-3 in stud)
Angled	- 6 lags (center 2 in stud)
Under Eave	- 4 lags (all 4 in stud)
Telescoping	- 6 lags (center 2 in stud)

dish Installation (Video)

8. Grounding

- Attach messenger wire to ground lug/screw
- Run messenger cable to ground block
- Install ground block(s)
- Connect messenger cable to ground block
- Connect messenger wire and ground wire to ground block
- Install grounding component
- Run the ground wire to the grounding component and connect

Critical step

- Secure cables every 12"- 24"
- Build a drip-loop below connections
- Torque all outdoor connectors to 30-in lbs

9. Cabling

Exterior Cabling: Pre-wired House

- Use multi-line identifier to identify proper lines
- Connect proper cables to ground block(s) and/or diplexer(s)
  - DNS approved RG6 cable
  - RG59 (backfeed and Joey line only)

Exterior Cabling: Running New Cables

- Drill all penetrations
- Feed cables through bushing and apply silicone
- Run the remaining exterior cables
  - Secure cable every 12"-24"
- Connect cables to ground block(s) and/or diplexer(s)

Drill penetrations

Tips:
- Identify a reference point
- Measure both entrance and exit points
- On wood - drill inside out
- On brick - drill outside in

Steps:
1- Clear both entrance and exit points
2- Cut hole for cut-in box
3- Inspect for obstructions
4- Drill through the wall

Tip

When making a wall penetration, use the hole in the tip of the 3/4" drill bit to attach the coax cable and feed the cable through the hole.

Vehicle Run 2

- Gather equipment and clear away any outside trash
- Return to vehicle
- Prepare interior cables
- Gather items
- Put on boot covers and proceed inside
  - May require multiple trips

Gather items

- Receiver(s)
- Connectivity device
- Tablet
- Vacuum
- SBSM
- Interior cables
- Wall-fishing supplies (if needed)
- Interior ladder (if needed)
- Screen cleaner

Interior Cabling

- Wall-fish (if requested)
- Attach wall plate to cable
- Attach wall plate to wall
- Run interior cables to receiver/TV
  - Secure cable every 12"-24"

10. Receiver Installation

Receiver Setup (ViP and earlier)

- Check signal strength with limit scan
- Unwrap receiver and place in a well-ventilated area
- Connect appropriate items (coax, triplexer, and/or remote antenna)
- Connect the receiver to the TV
- Plug receiver into a power outlet
- Run check switch and download software
- Prepare remote(s)
- Clean up receiver trash (including box)
- Repeat for all receivers
- TV2/Joeys (if applicable)
  - Connect to backfeed
  - Program remote to TV
  - Set SAT Auto Tune
  - Run auto channel scan on TV2
  - Repeat for all TV2s/Joeys

Tip

Perform a limit scan before you set up the receiver so you can identify any issues in the installation prior to activating and downloading the receiver.

Tip

While the receiver is downloading the software, proceed on to the next steps. Do not wait for the download to finish.

Prepare remotes

Put on labels and insert batteries

Device Code - Power Scan
[TV mode] hold - [power] - [up arrow] - TV turns off - [#]

Limited Mode
[TV mode] hold - [page up] - [#]

SAT Auto Tune
Program: [TV mode] hold - [*] - [TV2 channel ex. 60] - [#]
Enable: [sat mode] hold - [*] - [vol up] - [#]

Remote Address
At "System Info" screen:
[sat mode] hold - enter digits (1-15) - [#] - [Record]

Activate and Finalize Setup

- Activate receiver(s) on tablet
- Connect the receiver to Internet/phone
  - Run STB Health Live
  - Verify signal strength and connectivity
  - Retrieve positive code
- Change HDTV settings (if applicable)
- Verify programming on all TVs
- Vacuum up any mess
- Enter work notes and/or paperwork

Tip

USE THE VACUUM even if you do not believe you made a mess. This will instill a level of confidence with the customer that we CLEAN UP after our installations. This task can help your CSAT scores.

11. Customer Education

- Explain work completed to customer
- With permission, clean all TV screens
- Hand the remote to the customer
- Use the *Getting Started with DISH Guide*
- Use the *Getting Started with DVR Guide* (if applicable)

Use the *Getting Started Guide*

Quiz the customer on the basics of the system, including the 5 troubleshooting steps. Have the customer show you that they can get back to the correct input or channel.

12. Post Installation

- Have customer sign agreement(s)
- Thank customer
- Ensure you have all tools and equipment
- Return to vehicle
- Update appointment status to "Complete"
- Depart

ACCIDENT OR INCIDENT REPORTING

In case of an accident or incident involving a customer, visitor, or employee, administer appropriate first aid and/or notify emergency personnel, depending on the seriousness of the injury. All accidents or incidents must be reported immediately to your manager and the Human Resource Department, even if there is no apparent injury. An Accident Report needs to be filled out and returned to your manager. They are available in the warehouse, dispatch, human resource or see your manager for a form. Each employee should be familiar with where these are located. Submit Employee Accident Reports to your manager. Failure to report an on-the-job injury or accident will result in progressive discipline up to and including termination.

CELL PHONE POLICY

While at work, you are expected to refrain from using personal cell phones, including texting unless on an authorized break or lunch. Camera cell phones are prohibited in Intertech facilities.

Cell phones provided by Intertech are the property of the organization. If your phone is lost or damaged, please notify your manager immediately. If you leave our employment for any reason, the phone must be returned. Company cell phones are to be used for business purposes only.

Employees are responsible for keeping track of their cell phone usage and will be required to reimburse the Company for any excess charges. Information regarding the specifics of cell phone plans will be provided when the phones are distributed.

In the interest of personal safety, any employee driving a Company vehicle or personal vehicle for Company business is expected to refrain from using a cell phone while driving unless they use a headset or other "hands-free" method. Regardless of the circumstances, including slow or stopped traffic, employees are expected to pull off the road and safely stop the vehicle before placing or accepting a call. Any employee caught using a Company provided cell phone while driving will be subject to disciplinary action up to and including termination.

EARLY CLOSING/EMERGENCY CLOSING

Unless otherwise announced, Intertech is open for business and all employees are expected to make every effort to get to work on time and to work a full day. Employees should allow extra time for travel, both for his/her own safety and to ensure that (s)he reaches work on time. Non-exempt employees who arrive late for work will not be paid for time not worked. Employees who fail to report to work will be required to take PTO or unpaid leave from work.

If adverse weather conditions disrupt normal transportation routes to the extent that it would be extremely difficult for the majority of employees to reach home safely, an early closing may be warranted. This decision will be made by the President and announced by a member of the senior management. Employees are expected to remain at work until such an announcement is made.

E-MAIL POLICY

Use of Company E-Mail

E-mail may be used only for Company business. It is a violation of Company policy to use the Company e-mail system for any personal purposes.

Prohibitions on Use of E-mail

Employees may not use Company e-mail or electronic messaging systems to infringe the copyright or other intellectual property rights of third parties, to distribute defamatory, fraudulent or harassing messages, or otherwise to engage in any illegal or wrongful conduct.

Access and Disclosure

Authorized managers and supervisors may access or disclose private electronic messages or files of an employee for any valid business purpose. Employees will be so informed and required to consent to such access as a condition of employment.

Monitoring

The Company may engage in monitoring of electronic mail messages or other electronic files created by employees for valid business purposes, including employee supervision. All employees will be informed of such monitoring and will be required to consent to such monitoring as a condition of employment.

Encryption

Employees may encrypt their e-mail and files only with the use of software approved by the Company. This software may provide for retention by the Company of any key necessary to access encrypted messages, or may otherwise limit the degree of protection provided by such encryption.

EMPLOYEE CONDUCT AND WORK RULES POLICY

Intertech's interest lies in ensuring fair treatment of all employees and in making certain that disciplinary actions are prompt, uniform, and impartial. The major purpose of any disciplinary action is to correct the problem, prevent recurrence, and prepare the employee for satisfactory service in the future.

Although employment with Intertech is based on mutual consent and both the employee and Intertech have the right to terminate employment at will, with or without cause or advance notice, Intertech may use progressive discipline at its discretion. Progressive discipline is not a contract, either implicit or implied, that any employee should consider that they have an "entitlement" to any or all disciplinary action steps. Management reserves the right at all times to select the consequence relative to the act and previous employment history.

Disciplinary action may call for any of the following steps - documented verbal warning, written warning, suspension without pay, reduction in bonus or termination of employment - depending on the severity of the problem and the number of occurrences. There may be circumstances when one or more steps are bypassed. During an employee's introductory period, any disregard for Intertech rules will be cause for immediate discharge.

Intertech recognizes that there are certain types of employee problems that are serious enough to justify either suspension or, in extreme situations, termination of employment, without going through the usual progressive discipline steps.

While it is impossible to list every type of behavior that may be deemed a serious offense, the Employee Conduct and Work Rules policy includes examples of problems that may result in disciplinary action, up to and including, termination. These listed work rules will be applied uniformly on a non-discriminatory basis, and are not intended to be all inclusive. Any past practices concerning such conduct shall be considered void and will not excuse non-compliance with the work rules contained herein.

In the best interest of all parties, Intertech has formulated a code of conduct to ensure a harmonious employee-employer working relationship. The principle objective of any disciplinary action shall be to improve performance and efficiency of the employee.

ANY VIOLATION OF THE FOLLOWING RULES AND PRACTICES SHALL RESULT IN PROGRESSIVE DISCIPLINE UP TO AND INCLUDING DISCHARGE:

1. Overstaying authorized meal and/or rest periods.

2. Poor work performance, inattention to duties, or carelessness, causing damage to Intertech, employee, or customer property.

3. Failure to be at your work area at the start of the shift.

4. Leaving your assigned place of work without permission during working hours, except for scheduled meal periods and rest breaks.

5. Discourtesy toward a member of management, co-employee, customer or member of the public on Intertech premises or while engaging in Intertech business.

6. Excessive absenteeism and/or tardiness.

7. Unauthorized solicitation of contributions on Intertech premises or assigned job site.

8. Wasting time or loitering during working hours.

9. Failure to follow verbal or written instructions.

10. Smoking on Company premises.

11. Unauthorized operation of equipment or machinery.

12. Contributing to unsanitary and unhealthy conditions.

13. Disregarding personal appearance, dress, or hygiene.

14. Unauthorized personal phone calls.

15. Activities, such as horseplay, tricks, pranks, or disregard for the health, comfort, or safety of others.

16. Failure to adhere to the call-in procedure in the event of absence/tardiness.

17. Posting, defacing or removing notices, signs or writing on bulletin boards without authorization of management.

18. Creating or contributing to unsafe working conditions, failing to report unsafe acts or conditions, and failure to comply with Company safety rules.

19. Interfering with other employees or supervision in the discharge of their duties.

20. Concealing or failure to report an error or mistake.

21. Failure to immediately report on-the-job injury or accident to self or co-employees.

RESIGNATION/TERMINATION POLICY

Employment at Intertech is for no specified time, regardless of length of service. Just as you are free to leave for any reason, the Company reserves the same right to end the employment relationship with you at any time, with or without notice, for reasons not prohibited by law. Upon termination from employment, either voluntarily or involuntarily (e.g., layoff, discharge), an employee will be paid for the number of hours worked in the pay period plus accrued, unused vacation provided a minimum of two weeks notice is given and honored with out any disciplinary action incurred during period after notice is given. Health insurance credit is forfeited unless the employee is employed as of January 31, and is otherwise eligible.

Although our Company is sorry to lose any good employee, we realize that personal circumstances may make your resignation necessary. The management of the Company reserves the right to either continue such employee's 'position through the effective date of resignation, or accept such resignation immediately. Under the latter circumstances, the employee is not entitled to payor benefits beyond the effective date

REQUEST FOR STOP PAYMENT OF PAYROLL CHECK

EMPLOYEE INSTRUCTIONS

1. Use this form to request a stop payment on a lost payroll check and to request a replacement check. Please contact Intertech Digital Entertainment Inc at 716-625-8555 and ask for Human Resources prior to submitting and completing this form.
2. Complete Section I below.
3. Stop Payment requests will not be accepted until three (3) business days after payday. Example: Stop Payment Requests will be accepted beginning the Wednesday following a Friday payday.
4. Forms may be mailed or faxed. Fax completed form to 716-625-8464, or mail completed form to Intertech Digital Entertainment Inc, 6523 South Transit Road, Lockport, NY 14094. The replacement check will be mailed to your home address on file or picked up at Intertech Digital Entertainment Inc.. Hours of operation are Monday through Friday, 9:00 am – 5:00 pm.
5. To avoid similar problems in the future, choose to have your pay directly deposited to a banking institution. To participate in direct deposit for future pay, please complete Direct Deposit Authorization Agreement and submit to Intertech Digital Entertainment Inc.

SECTION I (To be Completed by Employee)

_____

Employee Name (Please Print First, MI, Last)

_____

Street Apt. No. City
State Zip

Employee No. |___|___|___|___|___|___| or Last 4 Digits of SS No. |_X_|_X_|_X_| – |_X_|_X_|X_| – |___|___|___|___|

Reason for check reissue (check one): ❒ Lost in Mail ❒ Lost After Receipt ❒ Stale Dated Check

❒ Please call when check is available for pickup: Phone No. _____

❒ Please mail reissued check

For consideration of a duplicate payment, the undersigned agrees to indemnify and hold harmless, Intertech Digital Entertaiment Inc, 6523 South Transit Road, Lockport, NY 14094, for the amount of the original check in the event payment thereof be held against Intertech Digital Entertainment Inc.

In the event the original check is received, you must return it immediately to Intertech Digital Entertainment Inc 6523 South Transit Road, Lockport, NY 14094, with no attempt to cash it under penalty of fraud.

I acknowledge receipt of no benefit from check dated ___/___/_____.

_____

Signature of Payee Date

SECTION II (Payroll Use Only)

❒ Address Change Submitted

Check No. _____ Net Amount $ _____.____

Pay Period No. _____ Beginning Date ___/___/_____ Ending Date ___/___/_____

Prepared by _____ Date ___/___/_____

Checked by _____ Date ___/___/_____ Payroll Preview Copy Attached _____

Phone Program Rules

1. You are responsible for the safety and security of your phone and stylus at all times. Always keep it in your sight unless it is either in a monitored charging station, locked and hidden in your truck or in a supervisor's care.

2. The phone must remain in its case whenever it is in the field (including travelling to and from Intertech and the customer site).

3. Food crumbs and spilled drinks damage phones. Take care to not leave your phone where food or drink can be spilled on it.

4. Screens are very sensitive. Do not place anything on top of or near the phone that could put pressure on the screen. Be careful not to scratch your screen and do not remove the screen protector.

5. Be careful when writing on the phone screen: Only a tablet stylus should be used. Using a pen or pencil to write or sign on the phone will cause permanent damage to the phone.

6. The phone can be damaged, even though it is in a protective case. Be careful how you handle your phone. Never bump, drop, or toss it.

7. Do not remove the phone from the protective case. The case is there to minimize the risk of damage during daily use.

8. Keep your passwords private. Do not share them with anyone. Do not write them down where others may find and use it.

9. Extreme temperatures can damage your phone. Don't leave it in a hot or cold vehicle for extended periods of time. If your phone has been exposed to extreme temperature, please allow it to return to room temperature before turning it on.

10. No stickers or personal decorations of any kind may be adhered to the exterior of the phone.

13. You are not permitted to install games, music and software on the phone. Applications like limewire, frostwire, kazaa or bit torrent are strictly prohibited. If technician installed programs cause system errors, it will be necessary that the phone be re-imaged.

14. The phones are for work-use only; refrain from using the phone to make personal calls. Minute and data usage will be monitored and any excessive use will be addressed.

15. All software installed by Intertech must remain on the phone at all times, and attempts to disable installed software or settings are a violation of the Acceptable Use Policy.

16. Do not hack. Any attempt to gain unauthorized access to other computer systems through the Intertech network or to go beyond your authorized access to the network is prohibited. This includes attempting to log in through another person's account or access another person's files. Tampering with or changing any hardware or software settings of any Intertech computer or phone is prohibited.

17. Some activities are expressly prohibited by federal, state, or local laws and ordinances. Other activities are inappropriate, as defined by the supervisors. Intertech will cooperate fully with local, state, or federal officials in any investigation related to any illegal activities conducted through the company network.

Please note: Violation of any of these rules will result in disciplinary action.

Intertech Digital Entertainment Inc. Information Systems
Phone Program Acceptable Use Policy

By signing I acknowledge that I have read the policy, understand that it applies to me, and agree to abide by the guidelines set forth.

Technician Name: _____

ETA Direct External ID: _____

Tech Code: _____ Last 4 of SS#: _____ Phone Pickup Date: _____

Tech Start Location:

	Lockport		Erie		Remote

Technician Signature: _____

Date Signed: _____

Manager Name: _____

Manager Signature: _____

Date Signed: _____

Below to be filled in by the I.T. Department

Tablet Received: _____

___ Stylus

___ AC Charger

___ Car Charger

___ Case

Review Request Form

Date Submitted to Manager:_____

Employee Name: _____ **Department:** (Select A Department)

Purpose Of Request

Check the applicable box:

Time-Off Request* ☐ Time off requests must be submitted for approval thirty days in advance for 5 or more days. All requests for 4 or less days (week days) must be submitted 3 days in advance. Any request pertaining to a weekend day must be submitted 7 days in advance.
ANY TIME OFF REQUEST TIED TO HOLIDAY-MUST BE SUBMITTED 30 DAYS IN ADVANCE
ALL EMERGENCY REQUEST SUBMITTED WITHOUT 5 DAY ADVANCED NOTICE MUST ALSO RECEIVE VERBAL APPROVAL BY TEAM LEADER AS

Employment/Job Status ☐ **Concerns with co-workers** ☐ **Other*** ☐ **Inventory** ☐

Payroll Review ☐ **Date(s) and Amount(s) in Question** _____

Details/Specifics: _____

Decision/Resolution: _____

Managers Comments (If any): _____

Date reviewed with Employee: _____

Adjustments Made and Date (If any) _____

Reviewed By: _____

Please feel free to use this form for any questions, comments and/or concerns.

*Time-off: Requests will be granted based on the man power of the department and on a first come first serve basis.

Due to the nature of our business there will be certain periods that time off will not be granted. Please see your direct supervisor for particular dates

****This is to be emailed to payroll@intertechdigital.com by Monday 10AM****

Intertech Digital Time Worked Card

Technicins Name:_____

Trainer:_____

Team Leader:_____

Week Ending:_____

Date	Day	In	Lunch	Out	Total	Partner
	Sat					
	Sun					
	Mon					
	Tue					
	Wed					
	Thur					
	Fri					

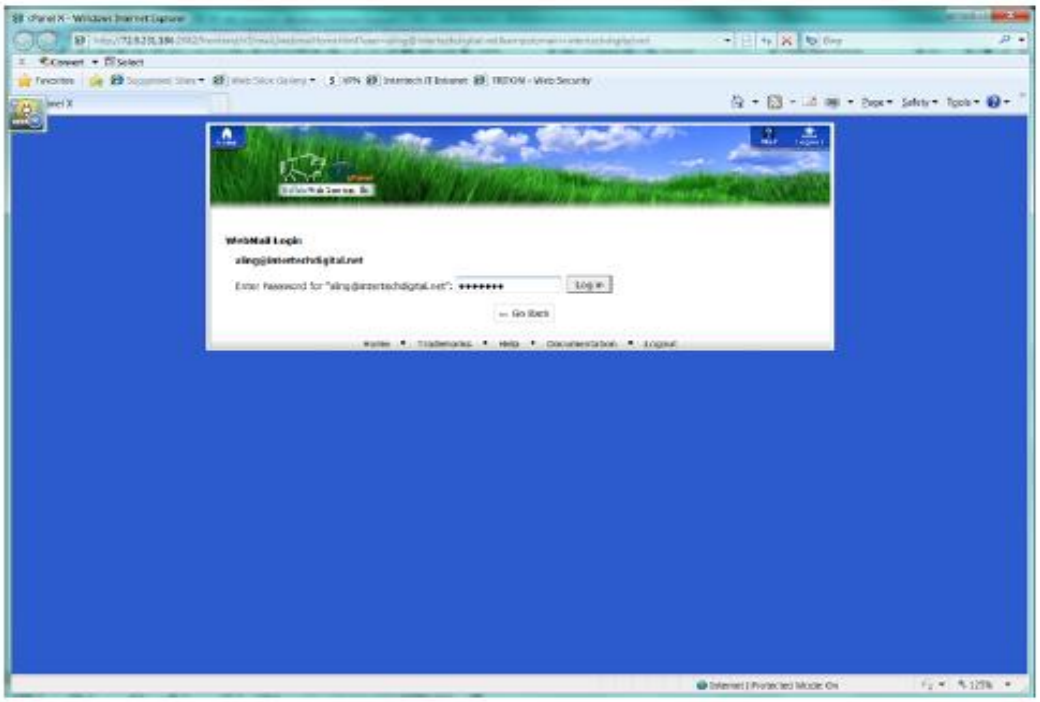
I certify that the information provided is an accurate and truthful accounting of my time

_____ Date_____ _____

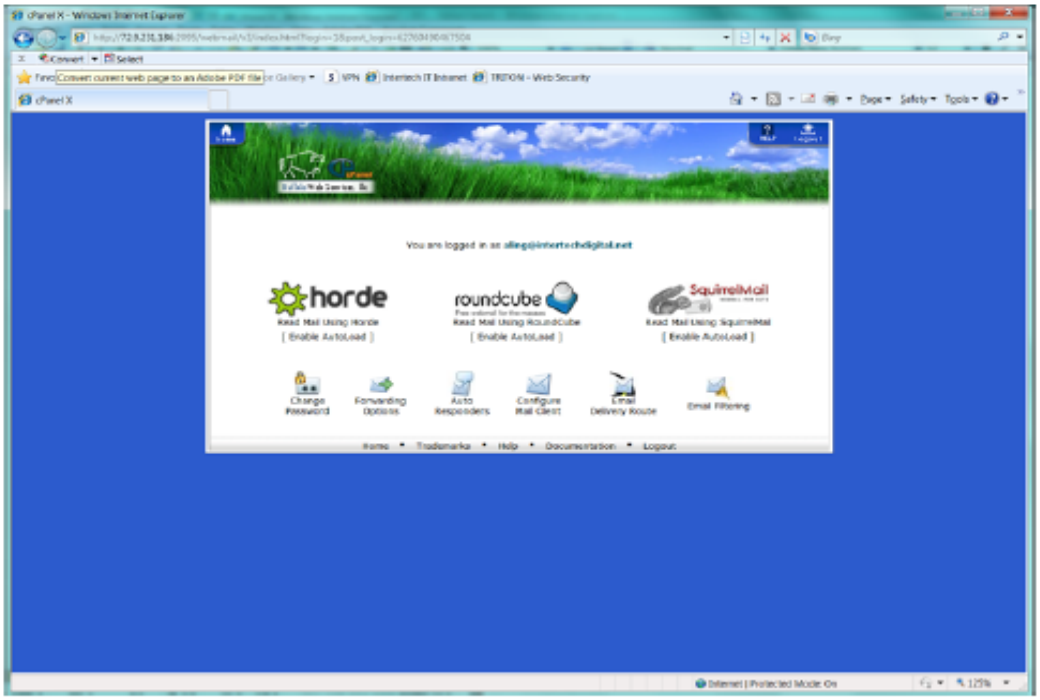
Employee Signature

How To Access Your Webmail Account

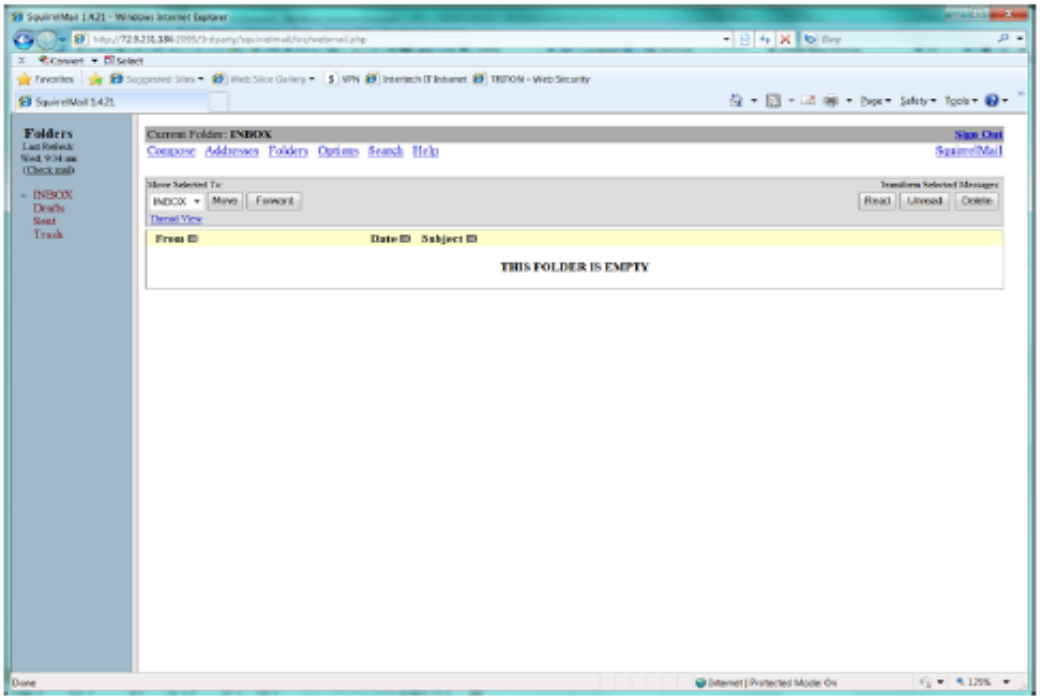
Go to mail.intertechdigital.net/webmail



Enter your password and click the Log In button



Click on the SquirrelMail icon to launch the webmail client



Remember that you need to delete e-mails that you no longer need or they will fill up your mailbox and prevent you from receiving new e-mails. Also remember to Log out when you are done using e-mail.